STIC Search Report
EIC 1700

STIC Database Tracking Number: 182696

TO: Jeffrey Fredman
Location: rem/2C89/2C18
Art Unit : 1637
March 29, 2006

Case Serial Number: 10/683753

From: Mei Huang
Location: EIC 1700
REMSEN 4B28
Phone: 571/272-3952
Mei.huang@uspto.gov

Search Notes

Examiner Fredman,

Please feel free to contact me if you have any questions or if you would like to refine the search query,

Thank you for using STIC services!

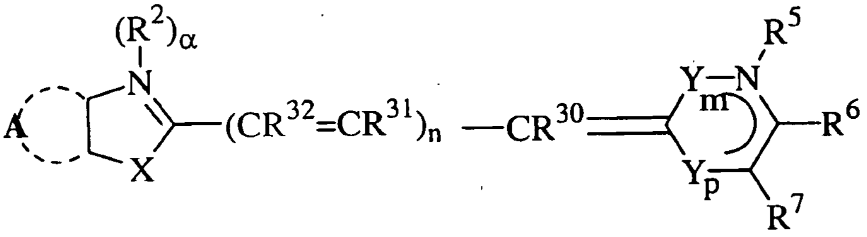
Mei Huang

CLAIMS

What is claimed is:

1. A method for determining the presence of an analyte of interest in a sample, wherein said method comprises:

a) combining said sample with a staining solution, wherein said staining solution comprises one or more dyes having formula



Formula I

wherein A represents the atoms necessary to form one to two fused aromatic rings having 6 atoms in each ring, at least one of which is a nitrogen atom, said ring or rings being optionally further substituted one or more times by C_1-C_6 alkyl, C_1-C_6 alkoxy trifluoromethyl, halogen, BRIDGE, -L-Rx or -L-Sc;

wherein Rx is a reactive group; Sc is a conjugated substance; and L and BRIDGE are independently a single covalent bond, or a covalent linkage;

X is O, S, Se, NR^{15}, or $CR^{16}R^{17}$, where R^{15} is H or an alkyl group having 1-6 carbons; and R^{16} and R^{17}, which may be the same or different, are independently alkyl groups having 1-6 carbons, or R^{16} and R^{17} taken in combination complete a five or six membered saturated ring;

R^2 is selected from the group consisting of –L-Rx, -L-Sc, TAIL, BRIDGE and an alkyl group having 1-6 carbons that is optionally substituted by sulfo, carboxy, amino, substituted amino or substituted ammonium, wherein α is 0 or 1; and TAIL is a heteroatom-containing moiety;

Y is $-CR^3=CR^4-$ wherein p and m = 0 or 1, such that p + m = 1;

R^3, R^4, R^6, and R^7 are independently selected from the group consisting of hydrogen, a C_1-C_6 alkyl, a halogen, a CYCLIC SUBSTITUENT, $-OR^8$, $-SR^8$, $-(NR^8R^9)$, TAIL; BRIDGE, -L-Rx and –L-Sc; where R^8 and R^9 are independently a C_1-C_6 alkyl group, 1-2 alicyclic or aromatic rings; or R^8 and R^9 taken in combination are $-(CH_2)_2-V-(CH_2)_2-$ where V is a single bond, -O-, $-CH_2-$, or $-NR^{10}-$, where R^{10} is H or an alkyl having 1-6 carbons;

wherein CYCLIC SUBSTITUENT is a substituted or unsubstituted aryl, heteroaryl or C_3-C_{10} cycloalkyl;

or R^6 and R^7 form a fused aromatic ring $-R^{11}=R^{12}-R^{13}=R^{14}-$ wherein R^{11}, R^{12}, R^{13}, and R^{14} are independently selected from the group consisting of hydrogen, C_1-C_6 alkyl group, $-OR^8$, $-SR^8$, $-(NR^8R^9)$,a CYCLIC SUBSTITUENT, TAIL, BRIDGE, -L-Rx and –L-Sc;

R^5 is independently selected from the group consisting of a C_1-C_6 alkyl group, a CYCLIC SUBSTITUENT, TAIL, BRIDGE, -L-Rx and –L-Sc; or R^5 is absent;

R^{30}, R^{31}, and R^{32} are independently selected from the group consisting of hydrogen, C_1-C_6 alkyl, C_3-C_{10} cycloalkyl, aryl, and heteroaryl, wherein n = 0, 1 or 2;

wherein, BRIDGE, when present, is bound to a compound having formula I or another unsymmetrical cyanine dye

b) incubating said sample and said staining solution for a sufficient amount of time to form a dye-analyte complex;

c) illiminating said complex with an appropriate wavelength whereby the presence of said analyte is determined.

STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact ***the EIC searcher or contact***:

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- *I am an examiner in Workgroup:* ☐ *Example: 1713*
- *Relevant prior art **found**, search results used as follows:*
  - ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
  (journal articles, conference proceedings, new product announcements etc.)

- *Relevant prior art **not found:***
  - ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28

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=> fil reg
FILE 'REGISTRY' ENTERED AT 08:59:55 ON 29 MAR 2006
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     (FILE 'HOME' ENTERED AT 08:06:33 ON 29 MAR 2006)

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L1           85 SEA (108-24-7/BI OR 109-72-8/BI OR 109-89-7/BI OR

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                ACT FRE753B/A
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L2              SCR 1574
L3              SCR 1840
L4              SCR 2040
L5              STR
L6         2463 SEA SSS FUL L5 AND L2 AND L3 AND L4
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     FILE 'HCAPLUS' ENTERED AT 08:16:09 ON 29 MAR 2006
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L8            1 SEA US2004137475/PN
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L9              QUE DETECT? OR SENSE# OR SENSING# OR ANALY? OR ANAL# OR
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                COMPARATOR? OR INSPECTOR? OR MONITOR?
L11             QUE DETERMIN? OR DETERMN# OR DET# OR DETN# OR EVALUAT?
                OR ASCERTAIN? OR RECOGNI? OR IDENTIF? OR INDICAT? OR
                DISTINGUISH? OR TEST OR TESTS OR TESTED OR TESTING# OR
                ASSESS? OR DIAGNOS?
L12             QUE ANALYTE#
L13       17184 SEA (L9 OR L10 OR L11)(3A)L12
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L14                QUE NUCLEIC(A)ACID#
L15                QUE DNA
L16                QUE RNA
L17                QUE PEPTIDE#
L18                QUE PROTEIN#
L19         558613 SEA (L9 OR L10 OR L11)(3A)(L14 OR L15 OR L16 OR L17 OR
                   L18)
L20              0 SEA L13 AND L7
L21             26 SEA L19 AND L7
L22             22 SEA L7 (L) ARG/RL
L23             29 SEA L21 OR L22
L24             24 SEA L7 (L) ANST/RL
L25             30 SEA L24 OR L21 OR L22

     FILE 'REGISTRY' ENTERED AT 08:59:55 ON 29 MAR 2006


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L2                 SCR 1574
L3                 SCR 1840
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L5                 STR
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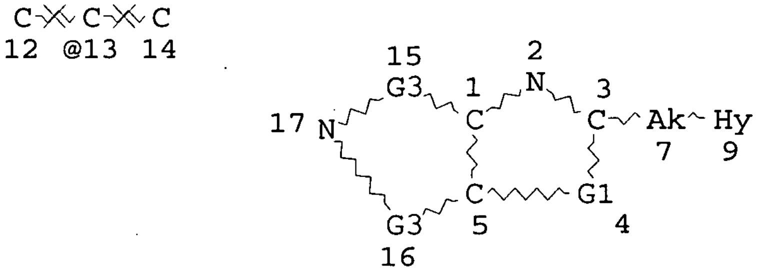

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DEFAULT ECLEVEL IS LIMITED
ECOUNT  IS M1-X5 C  AT    7
ECOUNT  IS M5 C  M1 N  AT    9

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS  13
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STEREO ATTRIBUTES: NONE
L6          2463 SEA FILE=REGISTRY SSS FUL L5 AND L2 AND L3 AND L4

100.0% PROCESSED   891429 ITERATIONS  (      2 INCOMPLETE)      2463 ANSWERS
SEARCH TIME: 00.00.12



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USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
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=>  sel hit rn l25
E1 THROUGH E230 ASSIGNED

=> d l25 ibib abs fhitstr hitind 1-30

L25  ANSWER 1 OF 30  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         2005:1242345  HCAPLUS
DOCUMENT NUMBER:          143:474548
TITLE:                    Field-switch single molecule DNA sequencing in a
                          two-electrode chamber
INVENTOR(S):              Williams, John G. K.; Anderson, Jon P.
PATENT ASSIGNEE(S):       Li-Cor, Inc., USA
SOURCE:                   PCT Int. Appl., 58 pp.
                          CODEN: PIXXD2
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.          KIND   DATE         APPLICATION NO.        DATE
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     WO 2005111240        A2    20051124     WO 2005-US14712
                                                                    200505
                                                                    02
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             GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM,
             KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,
             MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,
          SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG,
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      RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
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          NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,
          GN, GQ, GW, ML, MR, NE, SN, TD, TG
     US 2005266456        A1    20051201    US 2005-118031
                                                                200504
                                                                29
PRIORITY APPLN. INFO.:                      US 2004-567202P     P
                                                                200404
                                                                30

                                            US 2005-118031      A
                                                                200504
                                                                29
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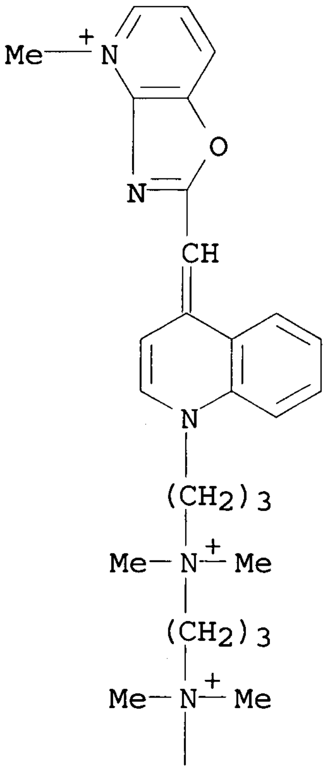
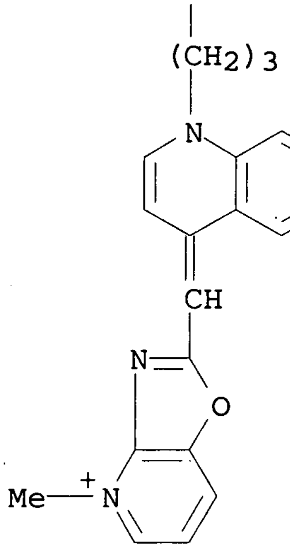
AB The present invention provides compns., methods and app. for single mol. DNA sequencing that can be performed, e.g., in a two-electrode chamber such as a microtiter plate fitted with two electrodes. As such, many different single DNA mols. (e.g., over two-hundred) can be sequenced simultaneously in a single well at a rate of about to about 200 nucleotides per s per mol. and at read lengths of 5-20 kilobases (kb) or more. In addn., the compns., methods and app. of the present invention reduce the cost of sequencing as compared to other long read approaches due to the high degree of multiplexing and the substitution of microtiter plates for expensive micro- or nanofabricated devices. As such, field-switch sequencing of the present invention provides long-read high-throughput sequencing with sufficient resoln. for single mol. detection. In certain other embodiments, the present invention provides a method for sequencing a nucleic acid, comprising: (a) immobilizing a plurality of complexes comprising a target nucleic acid, a primer nucleic acid, and a polymerase onto a surface; (b) contacting the surface with a plurality of charged particles comprising a nucleotide phosphate by applying an elec. field; (c) reversing the elec. field to transport unbound charged particles away from the surface; and (d) detecting the incorporation of the nucleotide phosphate into a single mol. of the primer nucleic acid. In certain aspects, the present invention provides methods, compns. and app. for field-switch sequencing, wherein nucleotide phosphates (e.g., NTP5) such as deoxyribonucleotide triphosphates (e.g., dNTP5) are attached to nanoparticles. In one embodiment, the terminal phosphate (e.g., γ-phosphate group of a NTP) is tethered via a linker to the surface of the nanoparticle. In a preferred embodiment, the linker comprises polyethylene glycol (PEG) attached to for example, a trifunctional group for connecting together the dye, the nucleotide and the particle. Advantageously, the particles of the present invention are used to carry or transport the substrate nucleotide phosphates (NP5) to a polymerase (e.g., immobilized polymerase).

IT **305801-87-0**, JOJO-1
RL: NUU (Other use, unclassified); USES (Uses)
(intercalating dye, attached to particle surface; field-switch single mol. DNA sequencing in a two-electrode chamber)
RN 305801-87-0 HCAPLUS
CN Oxazolo[4,5-b]pyridinium, 2,2'-[1,3-propanediylbis[(dimethyliminio)-3,1-propanediyl-1(4H)-quinolinyl-4-ylidenemethylidyne]]bis[4-methyl-, tetraiodide (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



●4 I⁻

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IC    ICM  C12Q001-68
      ICS  C07H021-04
CC    9-1 (Biochemical Methods)
      Section cross-reference(s): 3
IT    Apparatus
        DNA sequence analysis
      Dyes
      Electrodes
      Nanocrystals
      Nanoparticles
      Single molecule detection
         (field-switch single mol. DNA sequencing in a two-electrode
         chamber)
IT    143413-85-8, YOYO-1   156312-20-8, YOYO-3   169454-17-5, BOBO-3
      177571-06-1, PicoGreen   193487-59-1, Oil green 305801-87-0
      , JOJO-1 305802-06-6, LOLO-1
      RL: NUU (Other use, unclassified); USES (Uses)
         (intercalating dye, attached to particle surface; field-switch
         single mol. DNA sequencing in a two-electrode chamber)

L25  ANSWER 2 OF 30  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         2005:540626  HCAPLUS
```

```
DOCUMENT NUMBER:         143:61414
TITLE:                   Cyanine dye compounds useful for fluorescent
                         staining of DNA
INVENTOR(S):             Dalwig, Jason; Hagen, David; Huang, Timothy;
                         Thomas, Jerry; Yue, Stephen
PATENT ASSIGNEE(S):      Molecular Probes, Inc., USA
SOURCE:                  PCT Int. Appl., 111 pp.
                         CODEN: PIXXD2
DOCUMENT TYPE:           Patent
LANGUAGE:                English
FAMILY ACC. NUM. COUNT:  2
PATENT INFORMATION:

     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
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     WO 2005056689        A2    20050623    WO 2004-US40875
                                                                   200412
                                                                   06
     WO 2005056689        A3    20051013
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,
             CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
             GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
             KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
             MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
             SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
             VC, VN, YU, ZA, ZM, ZW
         RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
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             DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,
             NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,
             GN, GQ, GW, ML, MR, NE, SN, TD, TG
     US 2005214810        A1    20050929    US 2004-5860
                                                                   200412
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PRIORITY APPLN. INFO.:                      US 2003-527234P     P
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                                            US 2004-554472P     P
                                                                   200403
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OTHER SOURCE(S):         MARPAT 143:61414
GI
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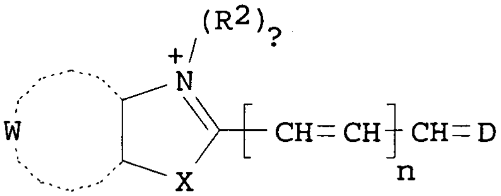

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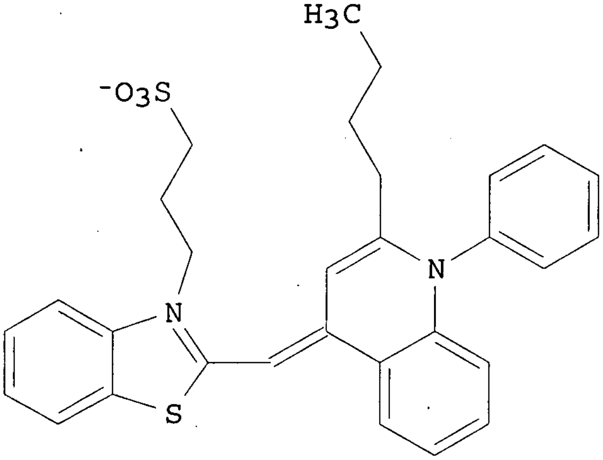
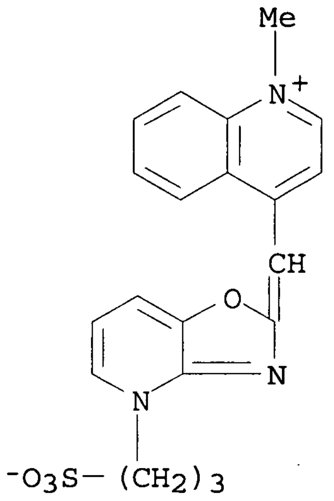


II

AB The invention relates to cyanine dye compds. having a neg. charged substituent that are nucleic acid stains, particularly for fluorescent staining of DNA, including compds. having the formula (I): wherein W forms one or two fused 5- or 6-membered arom. rings, a has a value of 0 or 1, n has a value of 0, or 1, X is O, S, or Se, and D is a pyridinium, or quinolinium moiety, provided that the compd. has at least one neg. charged substituent. Thus, a cyanine dye compd. II was synthesized and used as a fluorescent dye with Ex/Em (complex with nucleic acid) 500/520 and fluorescence enhancement ratio (DNA/RNA) 6.8.

IT **854648-01-4P**
RL: **ARG (Analytical reagent use)**; IMF (Industrial manufacture); **ANST (Analytical study)**; PREP (Preparation); USES (Uses)
(prodn. of cyanine dye compds. useful for fluorescent staining of DNA)

RN 854648-01-4 HCAPLUS
CN Quinolinium, 1-methyl-4-[[4-(3-sulfopropyl)oxazolo[4,5-b]pyridin-2(4H)-ylidene]methyl]-, inner salt (9CI) (CA INDEX NAME)



IC ICM C09B023-00
CC 41-11 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)
Section cross-reference(s): 9
IT 41528-03-4P 854647-57-7P 854647-59-9P 854647-61-3P
854647-63-5P 854647-65-7P 854647-67-9P 854647-69-1P
854647-71-5P 854647-73-7P 854647-75-9P 854647-76-0P
854647-77-1P 854647-78-2P 854647-79-3P 854647-80-6P
854647-81-7P 854647-82-8P 854647-83-9P 854647-86-2P
854647-87-3P 854647-88-4P 854647-89-5P 854647-90-8P
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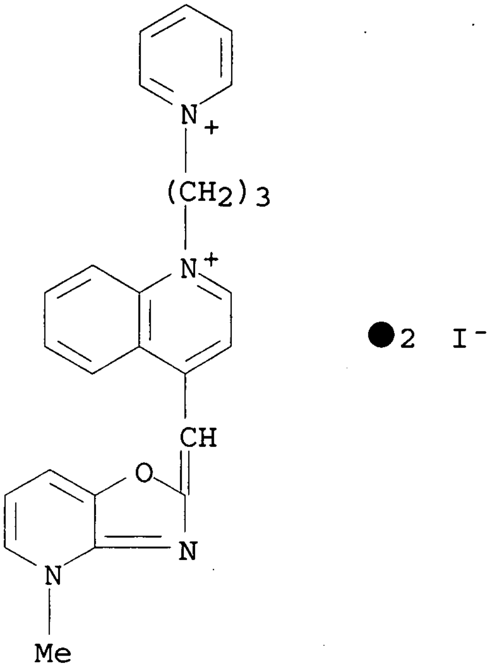
RL: **ARG (Analytical reagent use)**; IMF (Industrial manufacture); **ANST (Analytical study)**; PREP (Preparation); USES (Uses)
(prodn. of cyanine dye compds. useful for fluorescent staining of DNA)

L25 ANSWER 3 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:92319 HCAPLUS
DOCUMENT NUMBER: 143:9185

TITLE: Synthesis of novel monomeric and homodimeric cyanine dyes based on oxazolo[4,5-b]pyridinium and quinolinium end groups for **nucleic acid detection**
AUTHOR(S): Vasilev, Aleksey; Deligeorgiev, Todor; Gadjev, Nikolai; Drexhage, Karl-Heinz
CORPORATE SOURCE: Faculty of Chemistry, University of Sofia, Sofia, 1164, Bulg.
SOURCE: Dyes and Pigments (2005), 66(2), 135-142
CODEN: DYPIDX; ISSN: 0143-7208
PUBLISHER: Elsevier Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 143:9185

AB Twelve novel di-, tri- and tetracationic monomeric and homodimeric monomethine cyanine dyes based on oxazolo[4,5-b]pyridinium and quinolinium end groups were synthesized by condensation of 4-methyl-2-(methylthio)oxazolo[4,5-b]pyridinium methosulfate and 1-(ω-iodopropyl)-4-methylquinolinium or appropriate 1-(ω-bromoalkyl)-4-methylquinolinium compds. and subsequent quaternization with pyridine, 1-methyl-4-aza-1-azonia-bicyclo[2.2.2]octanium iodide, 4,4'-trimethylenebis(1-methylpiperidinium)methyl iodide, or N,N,N,N',N'-pentamethyl-1,3-propanediammonium iodide, or bisquaternization with N,N,N',N'-tetramethyl-1,3-propanediamine, 4,4'-trimethylenebis(1-methylpiperidine). All dyes absorb at 521-522 nm in methanol and have a high molar absorptivity of about 106,000 (monomeric dyes) and 240,000 L mol-1 cm-1 (homodimeric dyes). The products were characterized by 1H NMR spectra and elemental anal. In the presence of nucleic acid a strong enhancement of the fluorescence was obsd.

IT **852574-31-3P**
RL: DGN (Diagnostic use); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(fluorescent dye; prepn. of monomeric and homodimeric cyanine dyes based on oxazolo[4,5-b]pyridinium and quinolinium end groups for **nucleic acid detection**)
RN 852574-31-3 HCAPLUS
CN Quinolinium, 4-[(4-methyloxazolo[4,5-b]pyridin-2(4H)-ylidene)methyl]-1-(3-pyridiniopropyl)-, diiodide (9CI) (CA INDEX NAME)



CC 41-11 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)
Section cross-reference(s): 9, 73

ST cyanine cationic dye prepn fluorescence **indicator nucleic acid**

IT Cyanine dyes
(cationic; prepn. of monomeric and homodimeric cyanine dyes based on oxazolo[4,5-b]pyridinium and quinolinium end groups for **nucleic acid detection**)

IT Fluorescent dyes
(cyanine; prepn. of monomeric and homodimeric cyanine dyes based on oxazolo[4,5-b]pyridinium and quinolinium end groups for **nucleic acid detection**)

IT Cyanine dyes
(fluorescent; prepn. of monomeric and homodimeric cyanine dyes based on oxazolo[4,5-b]pyridinium and quinolinium end groups for **nucleic acid detection**)

IT Fluorescent indicators
(prepn. of monomeric and homodimeric cyanine dyes based on oxazolo[4,5-b]pyridinium and quinolinium end groups for **nucleic acid detection**)

IT Nucleic acids

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     RL: PRP (Properties)
        (prepn. of monomeric and homodimeric cyanine dyes based on
        oxazolo[4,5-b]pyridinium and quinolinium end groups for
        nucleic acid detection)
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     852574-40-4P 852574-41-5P 852574-42-6P
     RL: DGN (Diagnostic use); PRP (Properties); SPN (Synthetic
     preparation); TEM (Technical or engineered material use); BIOL
     (Biological study); PREP (Preparation); USES (Uses)
        (fluorescent dye; prepn. of monomeric and homodimeric cyanine
        dyes based on oxazolo[4,5-b]pyridinium and quinolinium end groups
        for nucleic acid detection)
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     877626-85-2
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        (prepn. of monomeric and homodimeric cyanine dyes based on
        oxazolo[4,5-b]pyridinium and quinolinium end groups for
        nucleic acid detection)
IT   14968-74-2P   62126-65-2P   877619-72-2P
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     RACT (Reactant or reagent)
        (prepn. of monomeric and homodimeric cyanine dyes based on
        oxazolo[4,5-b]pyridinium and quinolinium end groups for
        nucleic acid detection)
REFERENCE COUNT:         18    THERE ARE 18 CITED REFERENCES AVAILABLE
                               FOR THIS RECORD. ALL CITATIONS AVAILABLE
                               IN THE RE FORMAT

L25  ANSWER 4 OF 30  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:        2004:759712  HCAPLUS
DOCUMENT NUMBER:         141:255469
TITLE:                   Improving the signal/noise ratio of
                         nucleic acid hybridization
                         assays by preincubation of primer and
                         target with nucleic acid binding agents
INVENTOR(S):             Erikson, Glen H.; Daksis, Jasmine I.
PATENT ASSIGNEE(S):      Ingeneus Corporation, Barbados
SOURCE:                  U.S. Pat. Appl. Publ., 24 pp.
                         CODEN: USXXCO
DOCUMENT TYPE:           Patent
LANGUAGE:                English
FAMILY ACC. NUM. COUNT:  1
PATENT INFORMATION:
     PATENT NO.          KIND    DATE       APPLICATION NO.           DATE
     ---------------     ----    --------   --------------------
     --------
     US 2004180345        A1     20040916   US 2003-389033
                                                                      200303
                                                                      14
     WO 2004081221        A2     20040923   WO 2004-IB692
                                                                      200403
                                                                      04
     WO 2004081221        A3     20041223
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,
             CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
             GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
             KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
             MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,
             SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
             VC, VN, YU, ZA, ZM, ZW
         RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
             AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE,
             DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT,
             RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
             ML, MR, NE, SN, TD, TG
PRIORITY APPLN. INFO.:                          US 2003-389033      A
                                                                      200303
                                                                      14
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AB A method of improving the signal/noise ratio of nucleic acid hybridizations is described. These methods involve sep. incubating either the target or the probe with a DNA binding agent, typically an intercalating dye, before mixing the two and conducting the hybridization. The nucleic acid binding agents may also be DNA binding proteins such as transcription factors or recombination or repair proteins. A cation may also be added to improve hybridization efficiency and the stability of higher order (3- or 4-strand) hybrids. The pre-incubation increases the signal to noise ratio of the assay. The pre-incubation medium or the hybridization medium can also be pretreated with elec. voltage. A kit for performing the method includes the probe, a label adapted to emit the signal, and at least one target incubation agent and/or probe incubation agent.

IT **305801-86-9**, JO-PRO-1
RL: **ARG (Analytical reagent use)**; MOA (Modifier or additive use); **ANST (Analytical study)**; USES (Uses)
(in stabilization of nucleic acid hybrids; improving signal/noise

```
        ratio of nucleic acid hybridization
        assays by preincubation of primer and target with nucleic
        acid binding agents)
RN   305801-86-9  HCAPLUS
CN   Quinolinium, 4-[(4-methyloxazolo[4,5-b]pyridin-2(4H)-ylidene)methyl]-
     1-[3-(trimethylammonio)propyl]-, diiodide (9CI)  (CA INDEX NAME)
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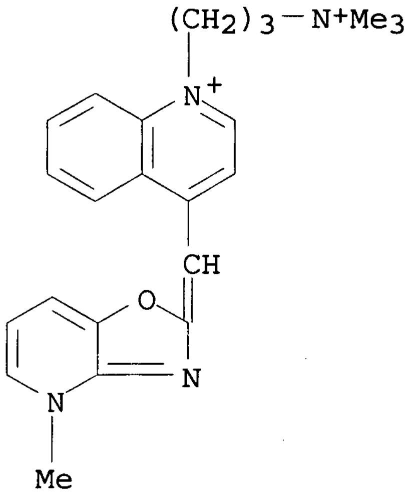

●2 I⁻

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IC   ICM  C12Q001-68
INCL 435006000
CC   3-1 (Biochemical Genetics)
IT   Quaternary structure
        (DNA quadruplex, in nucleic acid hybrids, stabilization of;
        improving signal/noise ratio of nucleic acid
        hybridization assays by preincubation of primer and
        target with nucleic acid binding agents)
IT   Quaternary structure
        (DNA triplex, in nucleic acid hybrids, stabilization of;
        improving signal/noise ratio of nucleic acid
        hybridization assays by preincubation of primer and
        target with nucleic acid binding agents)
IT   Dyes
        (SYTO and SYTOX, in stabilization of nucleic acid hybrids;
        improving signal/noise ratio of nucleic acid
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      hybridization assays by preincubation of primer and
      target with nucleic acid binding agents)
IT   Nucleic acid hybridization
     Test kits
      (improving signal/noise ratio of nucleic acid
      hybridization assays by preincubation of primer and
      target with nucleic acid binding agents)
IT   Electric potential
      (in pretreatment of solns. for nucleic acid hybridization;
      improving signal/noise ratio of nucleic acid
      hybridization assays by preincubation of primer and
      target with nucleic acid binding agents)
IT   Cations
     Cyanine dyes
      (in stabilization of nucleic acid hybrids; improving signal/noise
      ratio of nucleic acid hybridization
      assays by preincubation of primer and target with nucleic
      acid binding agents)
IT   Dyes
      (intercalating dyes; improving signal/noise ratio of
      nucleic acid hybridization assays by
      preincubation of primer and target with nucleic acid binding
      agents)
IT   65-61-2, Acridine orange   260-94-6, Acridine   260-94-6D, Acridine,
     derivs.   1239-45-8, Ethidium bromide   3546-21-2D, Ethidium,
     derivs.   7240-37-1, 7-Aminoactinomycin D   25535-16-4, Propidium
     iodide   58880-05-0, Ethidium monoazide   61926-22-5, Ethidium
     homodimer 1   68942-32-5, Ethidium-acridine heterodimer
     143413-84-7, TOTO-1   143413-85-8, YOYO-1   152068-09-2, YO-PRO-1
     154757-99-0, POPO-3   156312-20-8, YOYO-3   157199-56-9, PO-PRO-1
     157199-57-0, BO-PRO-1   157199-59-2, TO-PRO-1   157199-62-7,
     YO-PRO-3   157199-63-8, TO-PRO-3   161016-55-3, PO-PRO-3
     166196-17-4, TOTO-3   169454-13-1, BOBO-1   169454-15-3, POPO-1
     169454-17-5, BOBO-3   173357-16-9, BO-PRO-3   177027-61-1, TO-PRO-5
     177571-06-1, Pico Green   180389-01-9, Ethidium homodimer 2
     217087-73-5D, SYBR Green, derivs. 305801-86-9, JO-PRO-1
     305801-87-0, JOJO-1 305802-06-6, LOLO-1
     305802-07-7, LO-PRO-1
     RL: ARG (Analytical reagent use); MOA (Modifier or
     additive use); ANST (Analytical study); USES (Uses)
      (in stabilization of nucleic acid hybrids; improving signal/noise
      ratio of nucleic acid hybridization
      assays by preincubation of primer and target with nucleic
      acid binding agents)
IT   17341-25-2, Sodium cation, analysis
```

RL: ARU (Analytical role, unclassified); MOA (Modifier or additive use); ANST (Analytical study); USES (Uses)
(in stabilization of **nucleic acid** hybrids; improving signal/noise ratio of **nucleic acid** hybridization **assays** by preincubation of primer and target with nucleic acid binding agents)

IT 756537-69-6 756537-70-9 756537-71-0 756537-72-1 756537-73-2 756537-74-3 756537-75-4 756537-76-5 756537-77-6 756537-78-7 756537-79-8 756537-80-1 756537-81-2
RL: PRP (Properties)
(unclaimed nucleotide sequence; improving the signal/noise ratio of **nucleic acid** hybridization **assays** by preincubation of primer and target with nucleic acid binding agents)

L25 ANSWER 5 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:718694 HCAPLUS
DOCUMENT NUMBER: 141:237698
TITLE: Methods for nucleic acid sequencing
INVENTOR(S): Hoser, Mark J.
PATENT ASSIGNEE(S): UK
SOURCE: PCT Int. Appl., 87 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

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     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
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     WO 2004074503        A2    20040902   WO 2004-GB709
                                                                  200402
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     WO 2004074503        A3    20050324
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,
             CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
             GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
             KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
             MX, MZ, NA, NI
         RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT,
             BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
             IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI,
             CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
     EP 1594987           A2    20051116   EP 2004-713125
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         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
             PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,
             SK
PRIORITY APPLN. INFO.:                      GB 2003-3964        A
                                                              200302
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                                            GB 2003-5525        A
                                                              200303
                                                              11

                                            GB 2003-6119        A
                                                              200303
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                                            GB 2003-7515        A
                                                              200304
                                                              01

                                            GB 2003-10294       A
                                                              200305
                                                              03

                                            GB 2003-13689       A
                                                              200306
                                                              13

                                            GB 2003-20157       A
                                                              200308
                                                              28

                                            GB 2003-22245       A
                                                              200309
                                                              23

                                            GB 2003-25657       A
                                                              200311
                                                              04

                                            GB 2003-29053       A
                                                              200312
                                                              16
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                                       WO 2004-GB709       W
                                                             200402
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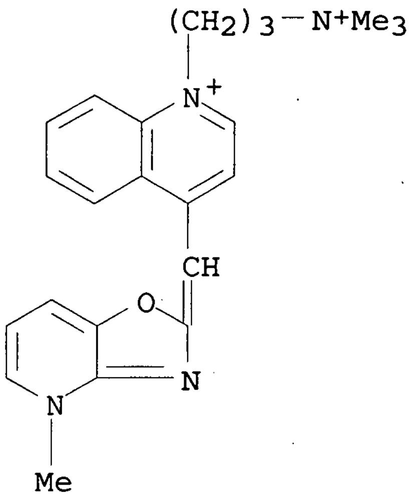
AB The present invention relates to nucleic acid sequencing methods, kits and reagents, and more particularly to methods of sequencing nucleic acid which employ a nucleic acid processing enzyme and one or more nucleotide analogs that are capable of binding to the active site of the enzyme and to complementary bases in the nucleic acid mol. being sequenced, but which are non-incorporable or inhibitors of the nucleic acid processing enzyme. In further aspects, the present invention relates to conjugates which comprise a deoxyribonucleotide triphosphates (DNTPs) or an analog thereof linked to an intercalating dye. Limitations of FRET based sequencing methods can be overcome by development of FRET and fluorescent quenched based technol. which does not rely on the incorporation of labeled bases into the growing oligonucleotide chain. Thus, the platform of this invention is based on the utilization of nucleotide analogs which enter the active site of the polymerase when a specific base on the DNA template is about to be copied, but are not incorporated into the new strand which continues to be synthesized from natural nucleotides.

IT **305801-86-9**, JO-PRO 1
RL: **ARG (Analytical reagent use)**; BUU (Biological use, unclassified); **ANST (Analytical study)**; BIOL (Biological study); USES (Uses)
(intercalating dye; methods for nucleic acid sequencing)

RN 305801-86-9 HCAPLUS

CN Quinolinium, 4-[(4-methyloxazolo[4,5-b]pyridin-2(4H)-ylidene)methyl]-1-[3-(trimethylammonio)propyl]-, diiodide (9CI) (CA INDEX NAME)



●2 I⁻

IC ICM C12Q

CC 3-1 (Biochemical Genetics)

IT **DNA** sequence **analysis**
Fluorescence quenching
Fluorescence resonance energy transfer
Fluorescent substances
Genotyping (method)
Polarized fluorescence
Quantum dot devices
Raman spectra
SERS (Raman scattering)
Surface plasmon resonance
(methods for **nucleic acid** sequencing)

IT Radioactivity
(radioactive label proximity **assay**; methods for **nucleic acid** sequencing)

IT 1239-45-8, Ethidium bromide 25535-16-4, Propidium iodide 107091-89-4, Thiazole orange 152068-09-2, YO-PRO 1 157199-56-9, PO-PRO 1 157199-57-0, BO-PRO 1 157199-59-2, TO-PRO 1 **305801-86-9**, JO-PRO 1 **305802-07-7**, LO-PRO 1
RL: **ARG (Analytical reagent use)**; BUU (Biological use, unclassified); **ANST (Analytical study)**; BIOL (Biological study); USES (Uses)

```
        (intercalating dye; methods for nucleic acid sequencing)

L25  ANSWER 6 OF 30  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         2004:371099  HCAPLUS
DOCUMENT NUMBER:          140:386988
TITLE:                    Genotyping by thermal denaturation analysis
                          using loss of fluorescence of double-stranded
                          DNA-specific dyes as a reporter to monitor
                          denaturation
INVENTOR(S):              Wittwer, Carl T.; Dujols, Virginie E.; Reed,
                          Gudrun; Zhou, Luming
PATENT ASSIGNEE(S):       University of Utah Research Foundation, USA;
                          Idaho Technology, Inc.
SOURCE:                   PCT Int. Appl., 100 pp.
                          CODEN: PIXXD2
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.          KIND   DATE       APPLICATION NO.         DATE
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     WO 2004038038        A2    20040506   WO 2003-US33429
                                                                   200310
                                                                   22
     WO 2004038038        A3    20040722
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB,
             GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,
             KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX,
             MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG,
             SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN,
             YU, ZA, ZM, ZW
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,
             BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
             EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,
             SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
             NE, SN, TD, TG
     CA 2501144           AA    20040506   CA 2003-2501144
                                                                   200310
                                                                   22
     EP 1558762           A2    20050803   EP 2003-777776
                                                                   200310
                                                                   22
        R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
            PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,
            SK
     JP 2006503590          T2     20060202    JP 2005-501646
                                                                 200310
                                                                 22
     US 2006019253          A1     20060126    US 2005-531966
                                                                 200504
                                                                 20
PRIORITY APPLN. INFO.:                         US 2002-420717P      P
                                                                 200210
                                                                 23

                                               US 2003-439978P      P
                                                                 200301
                                                                 14

                                               WO 2003-US33429      W
                                                                 200310
                                                                 22

OTHER SOURCE(S):            MARPAT 140:386988
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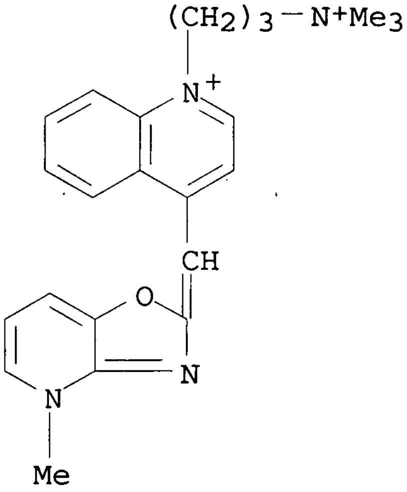
AB Methods of differentiating alleles of a gene by measuring thermal denaturation profiles by loss of fluorescence of a double-stranded DNA-specific fluorescent dye are described. In one embodiment, the nucleic acid is amplified in the presence of the dsDNA binding dye, and in another embodiment a melting curve is generated for the target **nucleic acid** by **measuring** fluorescence from the dsDNA binding dye as the mixt. is heated. Dyes for use in **nucleic acid anal.** and methods for making dyes are also provided. Polymorphisms in the hydroxytryptamine receptor 2A (HTR2A) gene (T102C), β-globin (Hbs S and C) gene, and cystic fibrosis (F508del, F508C, I507del) gene. PCR was performed in the presence of the double-stranded DNA dye LCGreen, and high-resoln. amplicon melting curves were obtained. After fluorescence normalization, temp. adjustment, and/or difference anal., sequence alterations were distinguished by curve shape and/or position. Heterozygous **DNA** was **identified** by the low-temp. melting of heteroduplexes not obsd. with other dyes commonly used in real-time PCR. The six common β-globin genotypes (AA, AS, AC, SS, CC, and SC) were all distinguished in a 110-bp amplicon. The HTR2A single-nucleotide polymorphism was genotyped in a 544-bp fragment that split into two melting domains. Because melting curve acquisition required only 1-2 min, amplification and anal. were achieved in 10-20 min with rapid cycling conditions. High-resoln. melting anal. of PCR products amplified in the presence of LCGreen can identify both heterozygous and homozygous sequence variants. The technique requires only the usual unlabeled primers and a generic double-stranded DNA dye added before PCR for amplicon genotyping, and is a promising method for mutation screening.

IT **305801-86-9**, JO-PRO1
RL: **ARG (Analytical reagent use)**; **ANST (Analytical study)**; USES (Uses)
(genotyping by thermal denaturation anal. using loss of fluorescence of double-stranded DNA-specific dyes as reporter to monitor denaturation)

RN 305801-86-9 HCAPLUS

CN Quinolinium, 4-[(4-methyloxazolo[4,5-b]pyridin-2(4H)-ylidene)methyl]-1-[3-(trimethylammonio)propyl]-, diiodide (9CI) (CA INDEX NAME)



●2 I^-

IC ICM C12Q

CC 3-1 (Biochemical Genetics)
Section cross-reference(s): 9

IT 131715-78-1, LC-Green 152068-09-2, YO-PRO 1 154757-99-0, POPO 3 156312-20-8, YOYO 3 157199-56-9, PO-PRO1 157199-57-0, BO-PRO1 157199-59-2, TO PRO 1 163795-75-3, SYBR Green I 166196-17-4, TOTO 3 169454-13-1, BOBO 1 169454-15-3, POPO 1 169454-17-5,

BOBO 3 173080-67-6, SYTO 11 173080-68-7, SYTO 12 173080-69-8, SYTO 13 173080-71-2, SYTO 15 173080-72-3, SYTO 16 **305801-86-9**, JO-PRO1 **305802-07-7**, LO PRO 1 335078-84-7, SYTO 43 335078-85-8, SYTO 44 335078-86-9, SYTO 45 335078-89-2, SYTO 20 335078-93-8, SYTO 23 364051-81-0, GelStar
RL: **ARG (Analytical reagent use); ANST (Analytical study)**; USES (Uses)
(genotyping by thermal denaturation anal. using loss of fluorescence of double-stranded DNA-specific dyes as reporter to monitor denaturation)

L25 ANSWER 7 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:328931 HCAPLUS
DOCUMENT NUMBER: 140:314092
TITLE: Calibration of quantitative assays or assay reagents
PATENT ASSIGNEE(S): Evotec OAI A.-G., Germany
SOURCE: Ger. Gebrauchsmusterschrift, 9 pp. CODEN: GGXXFR
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 20216998	U1	20040422	DE 2002-20216998	20021105
DE 10352123	A1	20040819	DE 2003-10352123	20031104

PRIORITY APPLN. INFO.: DE 2002-20216998 U1 20021105

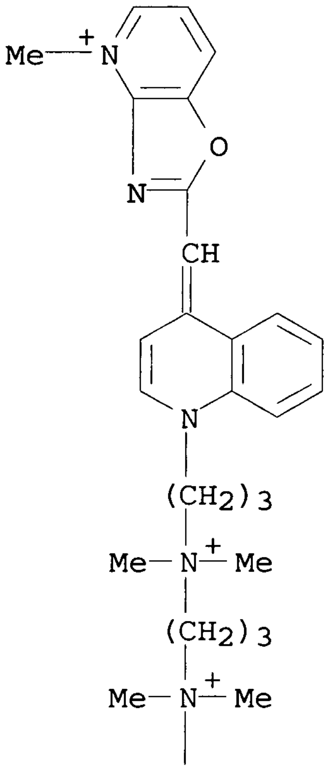
AB For the calibration of a quant. assay or assay reagent the wells of a base plate contain aq. calibration solns., such as UV-, visible-, IR-active, luminescent, or fluorescent dyes. The calibration compd. can be compd. which becomes detectable after complexation, intercalation, or reaction. The fluorescent dye can be a xanthene, rhodamine, oxazine, or cyanine. The dye can be PicoGreen, OliGreen, RiboGreen, TOTO, JOJO and ethidium bromide, calcein, calcium green, Fluo-3, Newport Green, or APTRA-BTC. Additives, such as fungicides, detergents, photo-stabilizers, or antibacterial agents, can be added to the calibration solns. The calibration solns. are covered by a polymeric foil in an air-tight fashion. The base plate consists of a polymer, such as polypropylene or polystyrene.

IT **305801-87-0**
RL: ARU (Analytical role, unclassified); **ANST (Analytical study)**
(calibration of quant. assays or assay reagents)

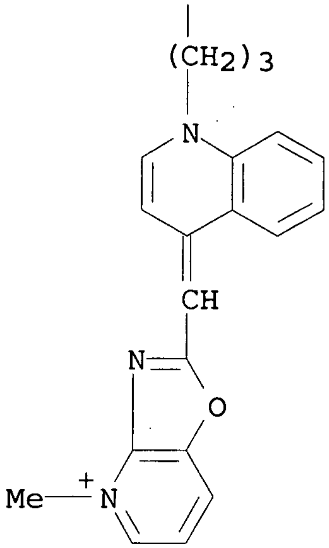
RN 305801-87-0 HCAPLUS

CN Oxazolo[4,5-b]pyridinium, 2,2'-[1,3-propanediylbis[(dimethyliminio)-3,1-propanediyl-1(4H)-quinolinyl-4-ylidenemethylidyne]]bis[4-methyl-, tetraiodide (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



●4 I⁻

IC ICM G01N037-00
ICS G01N021-17; G01N021-64; G01N033-53; B01L003-00
CC 80-7 (Organic Analytical Chemistry)
Section cross-reference(s): 9, 41
IT 1239-45-8, Ethidium bromide 1461-15-0, Calcein 123632-39-3, Fluo-3 138067-55-7, Calcium green 143413-84-7 177571-06-1, PicoGreen 216393-45-2, Glycine, N-[3-(2-benzothiazolyl)-6-(carboxymethoxy)-2-oxo-2H-1-benzopyran-7-yl]-N-(carboxymethyl)-, tripotassium salt 220751-06-4, RiboGreen 268220-33-3, OliGreen 288374-37-8, Newport Green **305801-87-0**
RL: ARU (Analytical role, unclassified); **ANST (Analytical study)**
(calibration of quant. assays or assay reagents)

L25 ANSWER 8 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:	2004:307412 HCAPLUS
DOCUMENT NUMBER:	140:339312
TITLE:	Fluorescent compounds for **detecting** multi-stranded **nucleic acid**
INVENTOR(S):	Takeuchi, Kazuya; Nakamura, Takemare
PATENT ASSIGNEE(S):	Fuji Photo Film Co., Ltd., Japan

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SOURCE:                       Jpn. Kokai Tokkyo Koho, 27 pp.
                              CODEN: JKXXAF
DOCUMENT TYPE:                Patent
LANGUAGE:                     Japanese
FAMILY ACC. NUM. COUNT:       1
PATENT INFORMATION:

     PATENT NO.          KIND   DATE       APPLICATION NO.           DATE
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     JP 2004113145        A2    20040415   JP 2002-282150
                                                                      200209
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PRIORITY APPLN. INFO.:                     JP 2002-282150
                                                                      200209
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GI

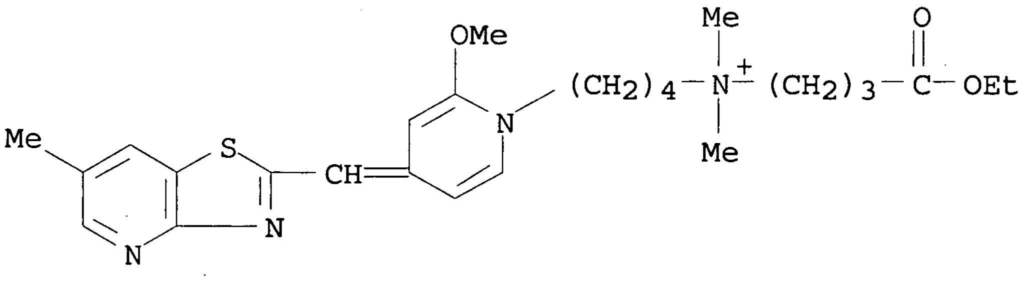
* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB Fluorescent compds. [I, II, III, and IV]; (R1-R3 = H, or a substituent; or R1 and R2 or R2 and R3 may be bonded to each other to form a ring; R4 = alkyl, aryl, heterocyclyl; Q = O or I; n = 0-3 integer; X = counter ion; q = a quantity necessary to neutralize the elec. charge of the mol.,; at least one among R5, R7, R10, R12 = electron donative substituent with Hammett's σp value > -1.5, and the rest H; R6, R8, R9, R11 = H or monovalent substituent, where a pair R5 and R6, R7 and R8, R9 and R10, or R11 and R12 may be bonded to each other to form a ring), as reagent for **detecting** multi-stranded **nucleic acid**, are disclosed. Those compds. are colorless in aq. soln. in protonated state in the absence of multi-stranded nucleic acid, but develop color upon interacting with multi-stranded nucleic acid and fluorescence. They are usable in weakly basic pH (6.0 ~ 8.0). Synthesis of some of those compds. are described.

IT **680221-63-0**
RL: **ARG (Analytical reagent use)**; **ANST (Analytical study)**; USES (Uses)
(fluorescent compds. for **detecting** multi-stranded **nucleic acid**)

RN 680221-63-0 HCAPLUS

CN 1(4H)-Pyridinebutanaminium, N-(4-ethoxy-4-oxobutyl)-2-methoxy-N,N-dimethyl-4-[(6-methylthiazolo[4,5-b]pyridin-2-yl)methylene]-, bromide (9CI) (CA INDEX NAME)



● Br^-

IC ICM C12Q001-68
ICS G01N033-53; G01N033-566; G01N033-58
CC 28-2 (Heterocyclic Compounds (More Than One Hetero Atom))
Section cross-reference(s): 9, 41
ST fluorescent compd **detection** multi stranded **nucleic acid** dsDNA
IT DNA
RL: ANT (Analyte); ANST (Analytical study)
(double-stranded; fluorescent compds. for **detecting** multi-stranded **nucleic acid**)
IT Fluorescent indicators
(fluorescent compds. for **detecting** multi-stranded **nucleic acid**)
IT Double stranded **RNA**
Nucleic acids
RL: ANT (Analyte); ANST (Analytical study)
(fluorescent compds. for **detecting** multi-stranded **nucleic acid**)
IT **680221-63-0 680221-64-1 680221-65-2**
680221-66-3 680221-67-4 680221-68-5
680221-69-6 680221-70-9 680221-71-0
680221-72-1 680221-73-2 680221-74-3
680221-75-4 680221-76-5 680221-77-6
680221-78-7 680221-79-8 680221-80-1
680221-81-2 680221-82-3 680221-83-4
680221-84-5 680221-85-6 680221-86-7

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     680221-90-3 680221-91-4 680221-92-5
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     680221-96-9 680221-97-0 680221-98-1
     680221-99-2 680222-00-8 680222-01-9
     680222-02-0 680222-03-1 680222-04-2
     680222-05-3 680222-06-4 680222-07-5
     680222-08-6 680222-09-7 680222-10-0
     680222-11-1 680222-12-2 680222-13-3
     680222-14-4 680222-15-5 680222-16-6
     680222-17-7 680222-18-8 680222-19-9
     RL: ARG (Analytical reagent use); ANST (Analytical
     study); USES (Uses)
        (fluorescent compds. for detecting multi-stranded
        nucleic acid)
IT   74-88-4, Methyl iodide, reactions   78-94-4, Methyl vinyl ketone,
     reactions   98-80-6, Phenylboronic acid   128-08-5,
     N-Bromosuccinimide   504-24-5, 4-Aminopyridine   536-90-3,
     m-Anisidine   872-50-4, N-Methylpyrrolidone, reactions   1072-97-5,
     2-Amino-5-bromopyridine   3167-49-5, 6-Amino nicotinic acid
     5332-26-3, N-Bromomethyl phthalimide   5720-07-0, 4-Methoxy
     phenylboronic acid   6238-12-6, 7-Methoxy lepidine   17282-00-7,
     2-Amino-3-bromo-5-methylpyridine   40451-21-6, Amino thiophenol
     586409-09-8, N,N,N,N-Dimethyl-3-ethoxycarbonyl propyl-3-
     bromobutylammonium bromide
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (fluorescent compds. for detecting multi-stranded
        nucleic acid)
IT   13534-98-0P, 4-Amino-3-bromopyridine   18471-73-3P,
     2-Amino-4-phenyl-pyridine   105909-85-1P, 5,7-Dimethoxy lepidine
     116990-44-4P, 2-Mercapto thiazolo [5,4-c] pyridine   178804-21-2P,
     5-(2-Benzothiazolyl)-2-aminopyridine   178804-22-3P,
     5-(2-Benzothiazolyl)-3-bromo-2-aminopyridine   405198-51-8P,
     2-Methylthio thiazolo [5,4-c] pyridine   488738-58-5P,
     6-Methyl-2-methylthio thiazolo [4 5-b] pyridine   586409-05-4P,
     6-Methyl-2-mercapto thiazolo [4,5-b] pyridine   592517-14-1P, Bromo
     6-methyl-2-methylthio-4-phthalimide methyl-thiazolo [4,5-b]
     pyridinium   680221-48-1P, Bromo 2-methylthio-6-phthalimide
     methyl-thiazolo [5,4-c] pyridinium   680221-52-7P,
     6-(2-Benzothiazolyl)-2-mercapto thiazolo [4,5-b] pyridine
     680221-53-8P, 6-(2-Benzothiazolyl)-2-methylthio thiazolo [4,5-b]
     pyridine   680221-54-9P, Bromo 6-(2-benzothiazolyl)-2-methylthio-4-
     phthalimide methyl-thiazolo [4,5-b] pyridinium   680221-55-0P,
     2-Amino-3-bromo-4-(4-methoxyphenyl)-pyridine   680221-56-1P,
     6-(4-Methoxyphenyl)-2-mercapto thiazolo [4,5-b] pyridine
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680221-57-2P, 6-(4-Methoxyphenyl)-2-methylthio thiazolo [4,5-b]
pyridine 680221-58-3P, Bromo 6-(4-methoxyphenyl)-2-methylthio-4-
phthalimide methyl-thiazolo [4,5-b] pyridinium 680221-59-4P,
2-Amino-3-bromo-4-phenyl-pyridine 680221-60-7P,
6-Phenyl-2-mercapto thiazolo [4,5-b] pyridine 680221-61-8P,
6-Phenyl-2-methylthio thiazolo [4,5-b] pyridine 680221-62-9P,
Bromo 6-Phenyl-2-methylthio-4-phthalimide methyl-thiazolo [4,5-b]
pyridinium
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
RACT (Reactant or reagent)
(fluorescent compds. for **detecting** multi-stranded
nucleic acid)

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L25  ANSWER 9 OF 30  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         2003:757324  HCAPLUS
DOCUMENT NUMBER:          139:272000
TITLE:                    Method for modifying transcription and/or
                          translation in an organism by heteropolymeric
                          probes and duplex, triplex or quadruplex
                          hybridization for therapeutic, prophylactic
                          and/or analytic uses
INVENTOR(S):              Erikson, Glen H.
PATENT ASSIGNEE(S):       Ingeneus Corporation, Barbados
SOURCE:                   U.S. Pat. Appl. Publ., 54 pp., Cont.-in-part of
                          U.S. Ser. No. 909,496.
                          CODEN: USXXCO
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   15
PATENT INFORMATION:

     PATENT NO.           KIND   DATE       APPLICATION NO.        DATE
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     US 2003181412         A1    20030925   US 2003-438151
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     US 6403313            B1    20020611   US 1999-468679
                                                                   199912
                                                                   21
     US 6420115            B1    20020716   US 2000-613263
                                                                   200007
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     US 6900300            B1    20050531   US 2000-664827
                                                                   200009
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     US 2002031775        A1    20020314    US 2001-909496
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     US 6656692           B2    20031202
     WO 2004100636        A2    20041125    WO 2003-IB5624
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     WO 2004100636        A3    20050317
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB,
             GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,
             KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX,
             MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG,
             SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN,
             YU, ZA, ZM, ZW
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,
             BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
             EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,
             SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
             NE, SN, TD, TG
PRIORITY APPLN. INFO.:                          US 1999-468679      A2
                                                                   199912
                                                                   21

                                                US 2000-613263      A2
                                                                   200007
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                                                US 2000-664827      A2
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                                                US 2001-909496      A2
                                                                   200107
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                                                US 2003-438151      A
                                                                   200305
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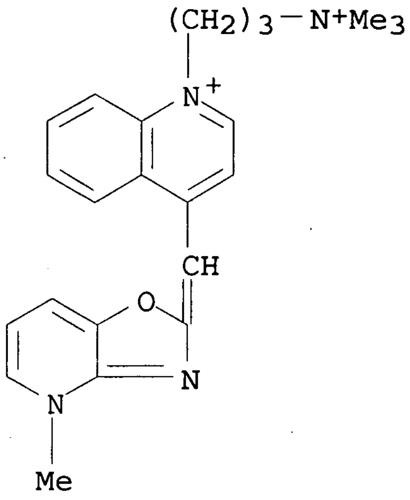
AB The invention relates to a method for modifying gene expression for therapeutic and/or prophylactic purposes, and more particularly to such a method wherein duplex, triplex and/or quadruplex complexes are formed by specific binding between single-stranded or

double-stranded nucleobase-contg. probes, utilizing fluorescent intercalating dyes, and single-stranded or double-stranded nucleobase-contg. target sequences. A method for modifying transcription and/or translation in an organism includes administering to the organism a compn. contg. a probe contg. a heteropolymeric probe sequence of nucleic acids or nucleic acid analogs; and binding the probe to a target, wherein the target is in the organism and contains a heteropolymeric target sequence of nucleic acids. The heteropolymeric probe sequence is bonded to the heteropolymeric target sequence to form a complex by Watson-Crick complementary base interaction or by homologous base interaction, provided that when the complex is a duplex and the heteropolymeric probe sequence is antiparallel to the heteropolymeric target sequence, the heteropolymeric probe sequence is bonded to the heteropolymeric target sequence by homologous base interaction, and provided that when the complex is a triplex, the complex is preferably free of RecA protein. The efficiency of parallele homologous ssDNA:ssDNA duplex formation for exon 10 of the human cystic fibrosis gene was demonstrated in the presence of a complex promoting agent such as YOYO-1. Triplex and quadruplex formation was also demonstarted.

IT **305801-86-9**, JOPRO-1
RL: **ARG (Analytical reagent use)**; PRP (Properties); THU (Therapeutic use); **ANST (Analytical study)**; BIOL (Biological study); USES (Uses)
(probe comprises binding promoter; method for modifying transcription and/or translation in organism by heteropolymeric probes and duplex, triplex or quadruplex hybridization for therapeutic, prophylactic and/or analytic uses)

RN 305801-86-9 HCAPLUS

CN Quinolinium, 4-[(4-methyloxazolo[4,5-b]pyridin-2(4H)-ylidene)methyl]-1-[3-(trimethylammonio)propyl]-, diiodide (9CI) (CA INDEX NAME)



●2 I⁻

IC ICM A61K048-00
ICS C12Q001-68
INCL 514044000; 435006000
CC 3-1 (Biochemical Genetics)
Section cross-reference(s): 1, 9
IT 65-61-2, Acridine orange 260-94-6, Acridine 260-94-6D, Acridine, derivs. 1239-45-8, Ethidium bromide 3546-21-2D, Ethidium, derivs. 7240-37-1, 7-Aminoactinomycin D 25535-16-4, Propidium iodide 61926-22-5, Ethidium homodimer-1 68942-32-5, Ethidiumacridine heterodimer 143413-84-7, TOTO-1 143413-85-8, YOYO-1 152068-09-2, YOPRO-1 154757-99-0, POPO-3 156312-20-8, YOYO-3 157199-56-9, POPRO-1 157199-57-0, BOPRO-1 157199-59-2, TOPRO-1 157199-62-7, YOPRO-3 157199-63-8, TOPRO-3 161016-55-3, POPRO-3 163795-75-3, SYBR Green I 166196-17-4, TOTO-3 169454-13-1, BOBO-1 169454-15-3, POPO-1 169454-17-5, BOBO-3 173357-16-9, BOPRO-3 177027-61-1, TOPRO-5 177571-06-1, Pico Green 180389-01-9, Ethidium homodimer-2 194100-76-0, SYTOX green 208540-89-0, SYTO 9 217087-73-5, SYBR green **305801-86-9**, JOPRO-1 **305801-87-0**, JOJO-1 **305802-06-6**, LOLO-1 **305802-07-7**, LOPRO-1
RL: **ARG (Analytical reagent use)**; PRP (Properties); THU (Therapeutic use); **ANST (Analytical study)**; BIOL (Biological study); USES (Uses)

```
          (probe comprises binding promoter; method for modifying
          transcription and/or translation in organism by heteropolymeric
          probes and duplex, triplex or quadruplex hybridization for
          therapeutic, prophylactic and/or analytic uses)

L25  ANSWER 10 OF 30  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         2003:673948  HCAPLUS
DOCUMENT NUMBER:          139:210391
TITLE:                    Asymmetric cyanine dyes for fluorescence
                          detection of nucleic
                          acids
INVENTOR(S):              Nakamura, Takemare; Takeuchi, Kazuya
PATENT ASSIGNEE(S):       Fuji Photo Film Co., Ltd., Japan
SOURCE:                   Jpn. Kokai Tokkyo Koho, 33 pp.
                          CODEN: JKXXAF
DOCUMENT TYPE:            Patent
LANGUAGE:                 Japanese
FAMILY ACC. NUM. COUNT:   2
PATENT INFORMATION:

     PATENT NO.          KIND   DATE        APPLICATION NO.         DATE
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     JP 2003238832        A2    20030827    JP 2002-36474
                                                                    200202
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     EP 1362894           A2    20031119    EP 2003-3488
                                                                    200302
                                                                    14
     EP 1362894           A3    20040310
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
             PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,
             SK
     US 2005112770        A1    20050526    US 2003-366449
                                                                    200302
                                                                    14
PRIORITY APPLN. INFO.:                      JP 2002-36473        A
                                                                    200202
                                                                    14

                                            JP 2002-36474        A
                                                                    200202
                                                                    14

OTHER SOURCE(S):         MARPAT 139:210391
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GI

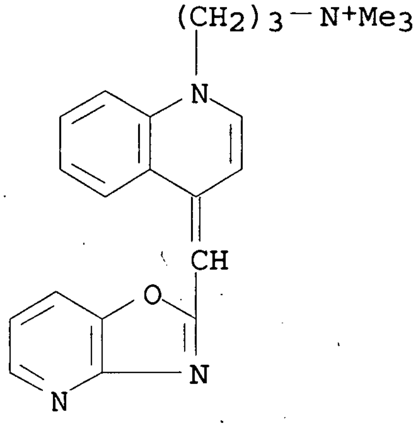
* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB Cyanine dyes I, II, III, IV (R1-R3 = H, substituent; R1R2 and R2R3 may form ring; Q = O, S, NR24, CR24R25; R24, R25 = alkyl, aryl, heterocyclyl; R6 = alkyl, aryl, heterocyclyl; R6 may form ring with R1, R3, G, or V2; R7-R9 = H, alkyl, aryl, heterocyclyl, halo, OR10, SR11, NR12R13; R7R8, R8R9, and R7R9 may form ring; R10-R13 = alkyl, aryl, acyl, sulfonyl, heterocyclyl; R12R13 may form ring; n = 0-3; V1, V2 = CR5, N; R5 = H, substituent; m = 0, 1; G = at. group required for forming 6-membered N heterocycle which may be fused to another ring), or their salts are useful for fluorescent **detection** of **nucleic acids.** An oxazolo[4,5-b]pyridine deriv. V was prepd. by reaction of 4-(2-carbamoylethyl)-2-methylthiooxazolo[4,5-b]pyridinium bromide and 4-methyl-1-(3-trimethylammoniopropyl)quinolinium dibromide (prepn. given). A phosphate buffer soln. (pH 6.5) contg. double-stranded DNA or single-stranded DNA (100 μg/mL) was mixed with V and dild. 10-fold with a phosphate buffer to give a sample soln. Fluorescence was measured at excitation wavelength 529 nm and fluorescence wavelength 543 nm. The fluorescence intensities of the double-stranded DNA and single-stranded DNA samples were 12 and 4, resp. The dye showed high fluorescence intensity in the presence of DNA and high selectivity for double-stranded DNA.

IT **586408-80-2P**
RL: **ARG (Analytical reagent use)**; SPN (Synthetic preparation); **ANST (Analytical study)**; PREP (Preparation); USES (Uses)
(prepn. of asym. cyanine dyes for fluorescence **detection** of **nucleic acids**)

RN 586408-80-2 HCAPLUS

CN 1(4H)-Quinolinepropanaminium, N,N,N-trimethyl-4-(oxazolo[4,5-b]pyridin-2-ylmethylene)-, bromide (9CI) (CA INDEX NAME)



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IC ICM C09B023-00
ICS C07D471-04; C07D498-04; C07D513-04; C09K011-06
CC 9-5 (Biochemical Methods)
Section cross-reference(s): 3, 28, 41
ST **nucleic acid detection** fluorescence
cyanine dye; **DNA detection** fluorometry cyanine
dye prepn; double stranded **DNA detection** cyanine
dye fluorometry
IT DNA
RL: ANT (Analyte); ANST (Analytical study)
(double-stranded; prepn. of asym. cyanine dyes for fluorescence **detection** of **nucleic acids**)
IT Fluorescent dyes
Fluorescent indicators
Fluorometry
(prepn. of asym. cyanine dyes for fluorescence **detection** of **nucleic acids**)
IT Nucleic acids
RL: ANT (Analyte); ANST (Analytical study)
(prepn. of asym. cyanine dyes for fluorescence **detection** of **nucleic acids**)
IT DNA
RL: ANT (Analyte); ANST (Analytical study)
(sodium complexes; prepn. of asym. cyanine dyes for fluorescence **detection** of **nucleic acids**)

IT 586408-79-9P **586408-80-2P** **586408-81-3P**
586408-82-4P 586408-83-5P 586408-84-6P
586408-85-7P **586408-86-8P** **586408-87-9P**
586408-88-0P **586408-89-1P** **586408-90-4P**
586408-92-6P **586408-93-7P** **586408-94-8P**
586408-95-9P **586408-96-0P** **586408-97-1P**
586408-98-2P
RL: **ARG (Analytical reagent use)**; SPN (Synthetic preparation); **ANST (Analytical study)**; PREP (Preparation); USES (Uses)
(prepn. of asym. cyanine dyes for fluorescence **detection** of **nucleic acids**)

IT 64-17-5, Ethanol, reactions 78-39-7, Ethyl orthoacetate 78-94-4, Methyl vinyl ketone, reactions 80-48-8, Methyl p-toluenesulfonate 83-34-1, 3-Methylindole 98-80-6, Phenylboronic acid 110-52-1, 1,4-Dibromobutane 124-40-3, Dimethylamine, reactions 140-89-6, Potassium xanthate 141-85-5, 3-Chloroaniline hydrochloride 302-01-2, Hydrazine, reactions 491-35-0, 4-Methylquinoline 563-80-4, 3-Methyl-2-butanone 624-28-2, 2,5-Dibromopyridine 629-03-8, 1,6-Dibromohexane 1993-09-5, 3-Fluoroaniline hydrochloride 2540-31-0 2969-81-5, Ethyl 4-bromobutyrate 3336-49-0, 4-Hydroxyisoquinoline 3779-42-8, (3-Bromopropyl)trimethylammonium bromide 3970-21-6, 2-Methoxyethoxymethyl chloride 4930-98-7, 2-Hydrazinopyridine 6320-96-3, 3-Bromopropionamide 16867-03-1, 2-Amino-3-hydroxypyridine 17282-00-7, 2-Amino-3-bromo-5-methylpyridine 35486-42-1, 2-Amino-3,5-dibromopyridine 39903-01-0, 2-Amino-5-bromo-3-hydroxypyridine 41037-26-7, 6-Methoxy-4-methylquinoline 51143-32-9 133081-24-0 166260-01-1, 3-Benzyloxy-2-nitropyridine
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of asym. cyanine dyes for fluorescence **detection** of **nucleic acids**)

IT 74-88-4P, Methyl iodide, preparation 2540-29-6P 2540-30-9P 10299-70-4P 22041-23-2P, Ethyl 4-dimethylaminobutyrate 36718-46-4P 41626-14-6P, 1,4-Dimethylquinolinium p-toluenesulfonate 53052-06-5P, 2-Mercaptooxazolo[4,5-b]pyridine 56961-79-6P, 3-Chloro-4-methylquinoline 77992-44-0P, 5-Bromo-2-hydrazinopyridine 86467-39-2P 144147-03-5P 166259-97-8P, 5-Amino-3-benzyloxy-2-nitropyridine 169205-95-2P
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586409-19-0P 586409-20-3P 586409-21-4P 586409-22-5P
586409-23-6P 586409-24-7P 586409-25-8P 586409-26-9P
586409-27-0P 586409-28-1P, Oxazolo[4,5-c]isoquinoline-2(3H)-thione
586409-29-2P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
RACT (Reactant or reagent)
(prepn. of asym. cyanine dyes for fluorescence **detection**
of **nucleic acids**)

L25 ANSWER 11 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:671447 HCAPLUS
DOCUMENT NUMBER: 139:210390
TITLE: Optical method for **measuring** multiple chain **nucleic acid** with dye
INVENTOR(S): Nakamura, Takeki; Takeuchi, Kazuya
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 42 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

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             PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,
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200202
14

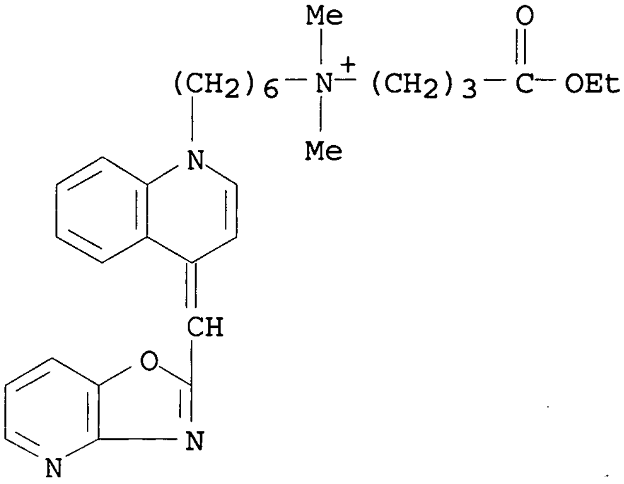
OTHER SOURCE(S): MARPAT 139:210390

AB An optical method is provided for **measuring** a multiple chain **nucleic acid** with a heterocyclic dye. The method contains a process for contacting a multiple chain nucleic acid with a compd. (dye) capable of interacting with the multiple chain nucleic acid. The compd. possesses the following properties: (a) to be able to substantially exist in a colorless and non-fluorescent state in an aq. soln. at least in one condition in the absence of a multiple chain nucleic acid; and (b) to be able to substantially change to a colorful state by the interaction with the multiple chain nucleic acid in the case that a multiple chain nucleic acid is existed under the condition of (a), and to substantially express a fluorescent property by the interaction. The structures of the heterocyclic compds. possessing such properties are given.

IT **586408-85-7**
RL: **ARG (Analytical reagent use)**; **ANST (Analytical study)**; **ANST (Analytical study)**
(optical method for **measuring** multiple chain **nucleic acid** with dye)

RN 586408-85-7 HCAPLUS

CN 1(4H)-Quinolinehexanaminium, N-(4-ethoxy-4-oxobutyl)-N,N-dimethyl-4-(oxazolo[4,5-b]pyridin-2-ylmethylene)-, bromide (9CI) (CA INDEX NAME)



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IC ICM G01N033-50
ICS C12Q001-68; G01N021-78; C12N015-09
CC 9-5 (Biochemical Methods)
IT DNA
RL: ANT (Analyte); ANST (Analytical study)
(double-stranded; optical method for **measuring** multiple chain **nucleic acid** with dye)
IT Nucleic acids
RL: ANT (Analyte); ANST (Analytical study)
(multiple chain; optical method for **measuring** multiple chain **nucleic acid** with dye)
IT Color reaction
DNA microarray technology
Dyes
Fluorometry
Solutions
UV and visible spectroscopy
(optical method for **measuring** multiple chain **nucleic acid** with dye)
IT **586408-85-7 586968-13-0 586968-14-1**
586968-15-2
RL: **ARG (Analytical reagent use)**; **ANST (Analytical study)**; USES (Uses)

(optical method for **measuring** multiple chain
nucleic acid with dye)

IT **586408-80-2P** 586408-84-6P **586408-87-9P**
586408-90-4P
RL: **ARG (Analytical reagent use)**; SPN (Synthetic
preparation); **ANST (Analytical study)**; PREP (Preparation);
USES (Uses)
(optical method for **measuring** multiple chain
nucleic acid with dye)

IT 586408-79-9P **586408-81-3P** **586408-82-4P**
586408-83-5P **586408-86-8P** **586408-88-0P**
586408-89-1P **586408-92-6P** **586408-93-7P**
586408-94-8P **586408-95-9P** **586408-96-0P**
586408-97-1P
RL: SPN (Synthetic preparation); PREP (Preparation)
(optical method for **measuring** multiple chain
nucleic acid with dye)

IT 587967-48-4 587967-49-5
RL: PRP (Properties)
(unclaimed nucleotide sequence; optical method for
measuring multiple chain **nucleic acid**
with dye)

L25 ANSWER 12 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:	2003:473101 HCAPLUS
DOCUMENT NUMBER:	139:48123
TITLE:	Methods, conditions, and accelerator agents for the preparation of nucleic acid multiplexes and fluorescent probes for detection of mismatches within the multiplexes
INVENTOR(S):	Erikson, Glen H.; Daksis, Jasmine I.; Kandic, Ivana; Picard, Pierre
PATENT ASSIGNEE(S):	Ingeneus Corporation, Can.
SOURCE:	U.S. Pat. Appl. Publ., 59 pp., Cont.-in-part of U.S. Ser. No. 664,827. CODEN: USXXCO
DOCUMENT TYPE:	Patent
LANGUAGE:	English
FAMILY ACC. NUM. COUNT:	15

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003113716	A1	20030619	US 2001-885731	

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                                                           200106
                                                           20
 US 6927027          B2    20050809
 US 6403313          B1    20020611   US 1999-468679
                                                           199912
                                                           21
 US 6420115          B1    20020716   US 2000-613263
                                                           200007
                                                           10
 US 6900300          B1    20050531   US 2000-664827
                                                           200009
                                                           19
 CA 2450831          AA    20021227   CA 2002-2450831
                                                           200205
                                                           31
 WO 2002103051       A2    20021227   WO 2002-IB1972
                                                           200205
                                                           31
 WO 2002103051       A3    20040429
     W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,
         CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD,
         GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,
         LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
         NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ,
         TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW
     RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,
         BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI,
         FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG,
         CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 EP 1436415          A2    20040714   EP 2002-733104
                                                           200205
                                                           31
     R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
         PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
 CN 1533441          A     20040929   CN 2002-812410
                                                           200205
                                                           31
 JP 2004534541       T2    20041118   JP 2003-505372
                                                           200205
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 BR 2002010544       A     20050531   BR 2002-10544
                                                           200205
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 NZ 530647           A     20051223   NZ 2002-530647
                                                           200205
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    ZA 2004000372         A      20040823    ZA 2004-372
                                                                    200401
                                                                    19
PRIORITY APPLN. INFO.:                       US 1999-468679       A2
                                                                    199912
                                                                    21

                                             US 2000-613263       A2
                                                                    200007
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                                             US 2000-664827       A2
                                                                    200009
                                                                    19

                                             US 2001-885731       A
                                                                    200106
                                                                    20

                                             WO 2002-IB1972       W
                                                                    200205
                                                                    31
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AB Heteropolymeric nucleic acid triplexes and quadruplexes and methods for making them are provided. The use of accelerator agents such as monovalent (Na+) and divalent cations (Mn2+, Mg2+, Ni2+) and non-intercalating fluorophores to create the multiplexes are also provided. The method comprises the steps of: (1) creating a mixt. comprising water, a Watson-Crick duplex (ds), a sufficient no. of single-stranded (ss) mixed base sequence mols. to form a multiplex that includes the Watson-Crick duplex, and an accelerator agents that increases the rate or amt. of multiplex formation; (2) incubating the mixt. to allow th multiplex to form, each strand of said multiplex related to all other strands of the multiplex by adherence to base-pairing rules. Single-stranded mol(s). are selected so that they would each be related to all other strands of the multiplex by adherence to base pairing rules, said rules being either Watson-Crick base-pairing rules or homologous binding base-pairing rules. The Watson-Crick duplex added in step (1) is heteropolymeric with a G-C content between 10% and 90%. Fluorescent intercalators and fluorescent probe-bound non-intercalators are described for detection of the multiplexes. Thus, the presence of the DNA-decondensing agent, YOYO-1, allows a ssDNA probe to be used to differentiate between perfectly complementary dsDNA:ssDNA

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     triplexes and those contg. 1 bp, 2 bp, or 3 bp mismatches or
     deletions, without the requirement for prior denaturation of dsDNA
     targets.
IT   305801-86-9, JO-PRO-1
     RL: ARG (Analytical reagent use); RGT (Reagent); ANST
     (Analytical study); RACT (Reactant or reagent); USES (Uses)
        (intercalating fluorescent accelerator; methods, conditions, and
        accelerator agents for prepn. of nucleic acid multiplexes and
        fluorescent probes for detection of mismatches within
        multiplexes)
RN   305801-86-9  HCAPLUS
CN   Quinolinium, 4-[(4-methyloxazolo[4,5-b]pyridin-2(4H)-ylidene)methyl]-
     1-[3-(trimethylammonio)propyl]-, diiodide (9CI)  (CA INDEX NAME)
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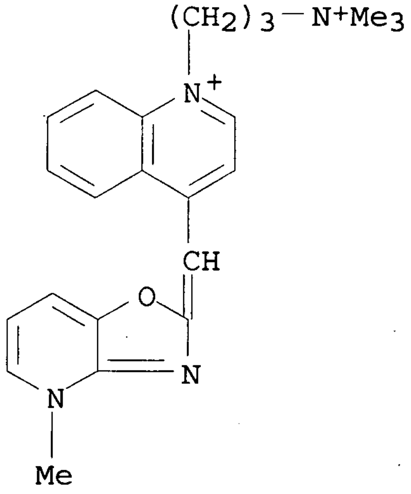

●2 I⁻

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IC   ICM  C12Q001-68
     ICS  C07H021-04
INCL 435006000; 536023100
CC   3-1 (Biochemical Genetics)
     Section cross-reference(s): 6, 33
ST   nucleic acid triplex quadruplex formation; accelerator cation
     fluorophore intercalator nucleic acid multiplex; mismatch
     detection nucleic acid multiplex
     fluorophore
```

IT 65-61-2, Acridine orange 260-94-6, Acridine 260-94-6D, Acridine, derivs. 1239-45-8, Ethidium bromide 3546-21-2D, Ethidium, derivs. 7240-37-1, 7-Aminoactinomycin D 25535-16-4, Propidium iodide 61926-22-5, Ethidium homodimer-1 63783-82-4D, Ethidium monoazide, derivs. 68942-32-5D, Ethidium-acridine heterodimer, derivs. 143413-84-7, TOTO-1 143413-85-8, YOYO-1 152068-09-2, YO-PRO-1 154757-99-0, POPO-3 156312-20-8, YOYO-3 157199-56-9, PO-PRO-1 157199-57-0, BO-PRO-1 157199-59-2, TO-PRO-1 157199-62-7, YO-PRO-3 157199-63-8, TO-PRO-3 161016-55-3, PO-PRO-3 163795-75-3, SYBR Green I 166196-17-4, TOTO-3 169454-13-1, BOBO-1 169454-15-3, POPO-1 169454-17-5, BOBO-3 173357-16-9, BO-PRO-3 177027-61-1, TO-PRO-5 177571-06-1, Pico Green 180389-01-9, Ethidium homodimer-2 **305801-86-9**, JO-PRO-1 **305801-87-0**, JOJO-1 **305802-06-6**, LOLO-1 **305802-07-7**, LO-PRO-1

RL: **ARG (Analytical reagent use)**; RGT (Reagent); **ANST (Analytical study)**; RACT (Reactant or reagent); USES (Uses)
(intercalating fluorescent accelerator; methods, conditions, and accelerator agents for prepn. of nucleic acid multiplexes and fluorescent probes for detection of mismatches within multiplexes)

L25 ANSWER 13 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:	2003:203298 HCAPLUS
DOCUMENT NUMBER:	138:232955
TITLE:	Kits and methods for purification of nucleic acids using heteropolymeric capture probes and duplex, triplex or quadruplex hybridization in soln. utilizing fluorescent intercalating dyes
INVENTOR(S):	Atkinson, Ian J.; Erikson, Glen H.; Daksis, Jasmine I.; Picard, Pierre
PATENT ASSIGNEE(S):	Ingeneus Corporation, Barbados
SOURCE:	U.S. Pat. Appl. Publ., 53 pp., Cont.-in-part of U.S. Ser. No. 909,496. CODEN: USXXCO
DOCUMENT TYPE:	Patent
LANGUAGE:	English
FAMILY ACC. NUM. COUNT:	15

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003049673	A1	20030313	US 2002-269229	200210

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US 6403313	B1	20020611	US 1999-468679		19991221
US 6420115	B1	20020716	US 2000-613263		20000710
US 6900300	B1	20050531	US 2000-664827		20000919
US 2002031775	A1	20020314	US 2001-909496		20010720
US 6656692	B2	20031202			
PRIORITY APPLN. INFO.:			US 1999-468679	A2	19991221
			US 2000-613263	A2	20000710
			US 2000-664827	A2	20000919
			US 2001-909496	A2	20010720

AB A purifn. method includes bonding a probe to a target in a sample to form a complex, and sepg. the sample from the complex to sep. in a sequence specific manner the target from the sample. The complex, which is immobilized on a support, is a duplex, triplex or quadruplex formed by Watson-Crick complementary base interaction or by homologous base interaction, provided that when the complex is a duplex and the heteropolymeric probe sequence is antiparallel to the heteropolymeric target sequence, the heteropolymeric probe sequence is bonded to the heteropolymeric target sequence by homologous base interaction, and provided that when the complex is a triplex, the complex is free of recombination proteins. A kit for performing the method includes the support and the probe.

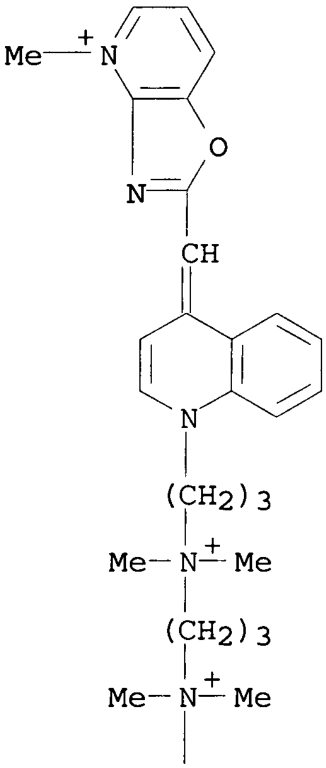
IT **305801-87-0**, JOJO1
RL: **ARG (Analytical reagent use)**; BUU (Biological use, unclassified); **ANST (Analytical study)**; BIOL (Biological

study); USES (Uses)
(as intercalating dye; kits and methods for purifn. of nucleic acids using heteropolymeric capture probes and duplex, triplex or quadruplex hybridization in soln. utilizing fluorescent intercalating dyes)

RN 305801-87-0 HCAPLUS

CN Oxazolo[4,5-b]pyridinium, 2,2'-[1,3-propanediylbis[(dimethyliminio)-3,1-propanediyl-1(4H)-quinolinyl-4-ylidenemethylidyne]]bis[4-methyl-, tetraiodide (9CI) (CA INDEX NAME)

PAGE 1-A



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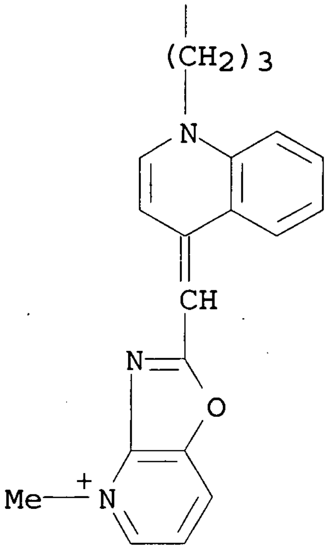


●4 I$^-$

IC ICM C12Q001-68
ICS B05D003-00
INCL 435006000; 427002110
CC 3-1 (Biochemical Genetics)
Section cross-reference(s): 9
IT 65-61-2, Acridine orange 260-94-6, Acridine 260-94-6D, Acridine,
derivs. 1239-45-8, Ethidium bromide 3546-21-2D, Ethidium,
derivs. 7240-37-1, 7-Amino actinomycin D 25535-16-4, Propidium
iodide 61926-22-5, Ethidium homodimer1 63783-82-4, Ethidium
monoazide 68942-32-5, Ethidium-acridine heterodimer 143413-84-7,
TOTO1 143413-85-8, YOYO1 152068-09-2, YO-PRO1 154757-99-0,
POPO3 156312-20-8, YOYO3 157199-56-9, PO-PRO1 157199-57-0,
BO-PRO1 157199-59-2, TO-PRO1 157199-62-7, YO-PRO3 157199-63-8,
TO-PRO3 161016-55-3, PO-PRO3 166196-17-4, TOTO3 169454-13-1,
BOBO1 169454-15-3, POPO1 169454-17-5, BOBO3 173357-16-9,
BO-PRO3 177027-61-1, TO-PRO5 177571-06-1, Picogreen
180389-01-9, Ethidium homodimer2 217087-73-5, SYBR green
305801-87-0, JOJO1 **305802-06-6**, LOLO1
305802-07-7, LO-PRO1
RL: **ARG (Analytical reagent use)**; BUU (Biological use,
unclassified); **ANST (Analytical study)**; BIOL (Biological

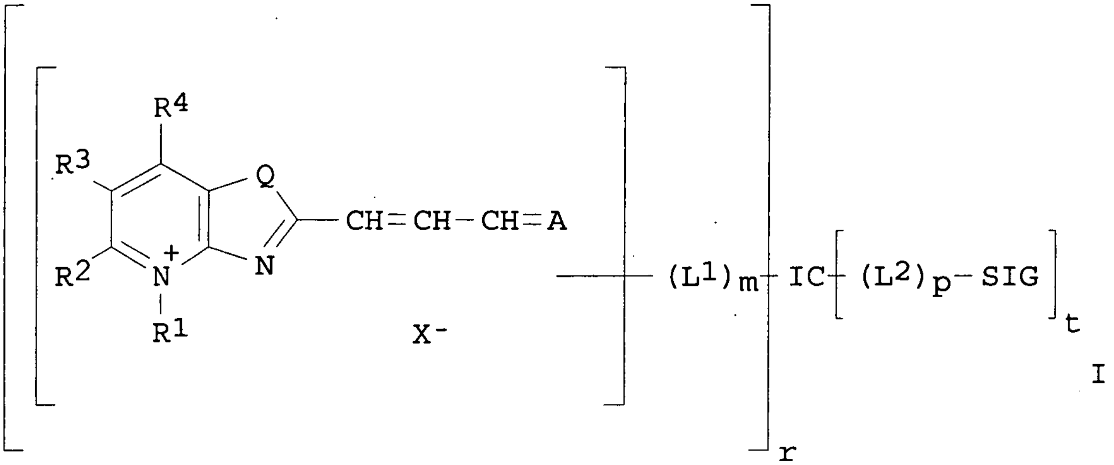
study); USES (Uses)
(as intercalating dye; kits and methods for purifn. of nucleic acids using heteropolymeric capture probes and duplex, triplex or quadruplex hybridization in soln. utilizing fluorescent intercalating dyes)

L25 ANSWER 14 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:141233 HCAPLUS
DOCUMENT NUMBER: 138:170261
TITLE: Azacyanine dye-based fluorescent indicators with high affinity for multiplex **nucleic acid** complex for **detection** of **nucleic acids** via hybridization
INVENTOR(S): Nakamura, Takeki
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003052400	A2	20030225	JP 2001-247539	20010817
PRIORITY APPLN. INFO.:			JP 2001-247539	20010817

OTHER SOURCE(S): MARPAT 138:170261
GI


I

AB A method for **detection** of **nucleic acids** using hybridization probes and an azacyanine dye-based fluorescent indicator having higher affinity for duplex or triplex nucleic acid complex than to single-stranded forms are described. The fluorescent indicators of the invention have the general formula (I) (R1 = alkyl, aryl; Q = O, S, N(R), C(R)(R'); R,R' = H, monovalent substituent; R2,R3,R4 = H, monovalent substituent; R1 and R2, R2 and R3, or R3 and R4 may form a ring; A = atoms necessary for forming an azacyanine dye; X = counter ion or neg. charge within azacyanine dye; n = 0-2; L1 = divalent linker connecting IC and R1, R2, R3, R4, Q, or A; m = 0, 1; IC = planar 3- or 4- membered ring structure with affinity for multiplex nucleic acid complex; r = 1-4; L2 = divalent linker connecting SIG and IC; SIG = dye; p = 0,1; t = 0-3; r + t ≥ 2). Synthetic schemes for some of those compds. are shown. Fluorescent compds. of this invention provided a much higher signal to noise ratio compared to the ref. compds. when used in combination with immobilized probes.

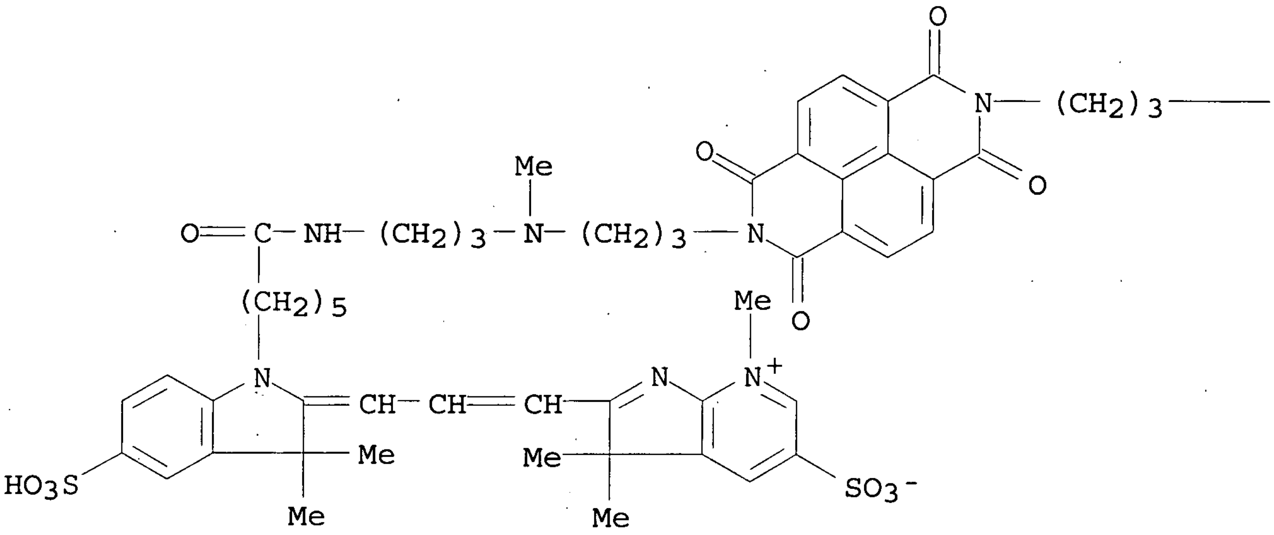
IT **497237-37-3**
RL: **ARG (Analytical reagent use)**; **ANST (Analytical study)**; **ANST (Analytical study)**
(azacyanine dye-based fluorescent indicators with high affinity for multiplex **nucleic acid** complex for **detection** of **nucleic acids** via hybridization)

RN 497237-37-3 HCAPLUS

CN 3H-Pyrrolo[2,3-b]pyridinium, 2,2'-[(1,3,6,8-tetrahydro-1,3,6,8-tetraoxobenzo[lmn][3,8]phenanthroline-2,7-diyl)bis[3,1-

propanediyl(methylimino)-3,1-propanediylimino(6-oxo-6,1-hexanediyl)(3,3-dimethyl-5-sulfo-1H-indol-1-yl-2(3H)-ylidene)-1-propen-1-yl-3-ylidene]]bis[3,3,7-trimethyl-5-sulfo-, bis(inner salt), dipotassium salt (9CI) (CA INDEX NAME)

PAGE 1-A



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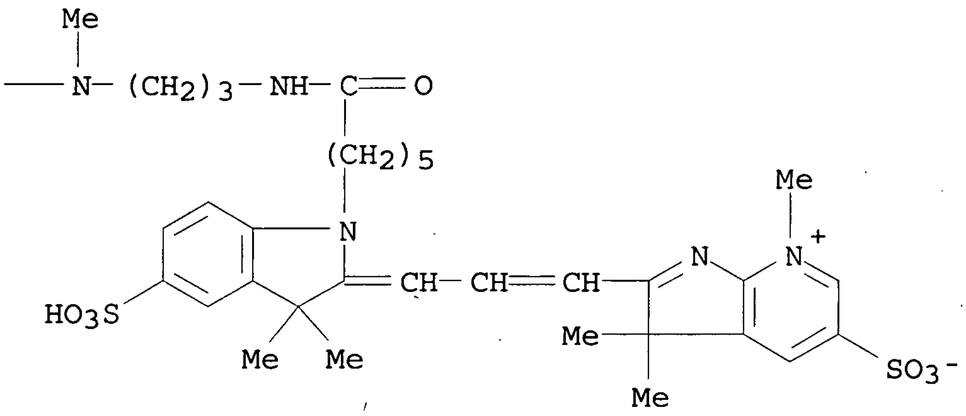
PAGE 1-B



IC ICM C12Q001-68
ICS C12N015-09; G01N021-78; G01N033-53; G01N033-566; G01N037-00
CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))
Section cross-reference(s): 3, 9
ST azacyanine dye fluorescent **indicator** multiplex
nucleic acid complex affinity
IT Quaternary structure
(**DNA** triplex, **indicators** with high affinity
for; azacyanine dye-based fluorescent indicators with high
affinity for multiplex **nucleic acid** complex
for **detection** of **nucleic acids** via
hybridization)
IT Cyanine dyes
Fluorescent indicators
Immobilization, molecular or cellular
(azacyanine dye-based fluorescent indicators with high affinity
for multiplex **nucleic acid** complex for
detection of **nucleic acids** via
hybridization)
IT Nucleic acids
RL: ANT (Analyte); ANST (Analytical study)
(azacyanine dye-based fluorescent indicators with high affinity
for multiplex **nucleic acid** complex for
detection of **nucleic acids** via
hybridization)
IT Probes (nucleic acid)
RL: ARG (Analytical reagent use); ANST (Analytical study); USES
(Uses)

(azacyanine dye-based fluorescent indicators with high affinity for multiplex **nucleic acid** complex for **detection** of **nucleic acids** via hybridization)

IT **Nucleic acids**
RL: ANT (Analyte); ANST (Analytical study)
(complexes, **indicators** with high affinity for; azacyanine dye-based fluorescent indicators with high affinity for multiplex **nucleic acid** complex for **detection** of **nucleic acids** via hybridization)

IT **DNA**
RL: ANT (Analyte); ANST (Analytical study)
(double-stranded, **indicators** with high affinity for; azacyanine dye-based fluorescent indicators with high affinity for multiplex **nucleic acid** complex for **detection** of **nucleic acids** via hybridization)

IT Oligonucleotides
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(immobilized, probes; azacyanine dye-based fluorescent indicators with high affinity for multiplex **nucleic acid** complex for **detection** of **nucleic acids** via hybridization)

IT **497237-37-3 497237-39-5 497237-40-8 497237-41-9 497237-42-0**
RL: **ARG (Analytical reagent use)**; **ANST (Analytical study)**; USES (Uses)
(azacyanine dye-based fluorescent indicators with high affinity for multiplex **nucleic acid** complex for **detection** of **nucleic acids** via hybridization)

IT **497237-38-4P**
RL: **ARG (Analytical reagent use)**; SPN (Synthetic preparation); **ANST (Analytical study)**; PREP (Preparation); USES (Uses)
(azacyanine dye-based fluorescent indicators with high affinity for multiplex **nucleic acid** complex for **detection** of **nucleic acids** via hybridization)

IT 81-30-1 622-15-1 2969-81-5 4246-51-9, Diethyleneglycol bis(3-aminopropyl) ether 10299-70-4 24424-99-5, Di-tert-butyl dicarbonate 56602-33-6 194920-62-2
RL: RCT (Reactant); RACT (Reactant or reagent)

```
   (azacyanine dye-based fluorescent indicators with high affinity
   for multiplex nucleic acid complex for
   detection of nucleic acids via
   hybridization)
IT 407628-22-2P  497237-44-2P  497237-45-3P 497237-46-4P
   497237-47-5P  497237-49-7P  497237-50-0P
   RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
   RACT (Reactant or reagent)
      (azacyanine dye-based fluorescent indicators with high affinity
      for multiplex nucleic acid complex for
      detection of nucleic acids via
      hybridization)
IT 497317-00-7
   RL: PRP (Properties)
      (unclaimed nucleotide sequence; azacyanine dye-based fluorescent
      indicators with high affinity for multiplex nucleic
      acid complex for detection of nucleic
      acids via hybridization)

L25  ANSWER 15 OF 30  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         2003:141231  HCAPLUS
DOCUMENT NUMBER:          138:166251
TITLE:                    FRET-based detection of
                          nucleic acids using
                          luminescent indicators with high
                          affinity for multiplex nucleic acid complex
INVENTOR(S):              Nakamura, Takeki; Inomata, Hiroko; Kojima,
                          Masayoshi
PATENT ASSIGNEE(S):       Fuji Photo Film Co., Ltd., Japan
SOURCE:                   Jpn. Kokai Tokkyo Koho, 12 pp.
                          CODEN: JKXXAF
DOCUMENT TYPE:            Patent
LANGUAGE:                 Japanese
FAMILY ACC. NUM. COUNT:   3
PATENT INFORMATION:
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PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003052398	A2	20030225	JP 2001-247536	20010817
US 2003165918	A1	20030904	US 2002-219671	20020816

PRIORITY APPLN. INFO.: JP 2001-247535 A 20010817

JP 2001-247536 A 20010817

JP 2001-247538 A 20010817

AB A method for **detection** of **nucleic acids** using hybridization probes and at least a pair of luminescent compds. having higher affinity for duplex or triplex nucleic acid complex than to single-stranded forms are described. At least one of the luminescent compds. is an intercalating agent. Fluorescent compds. of this invention provided a much higher signal to noise ratio due to fluorescence resonance energy transfer (FRET) compared to the ref. compds. when used in combination with immobilized probes.

IT **497239-56-2**

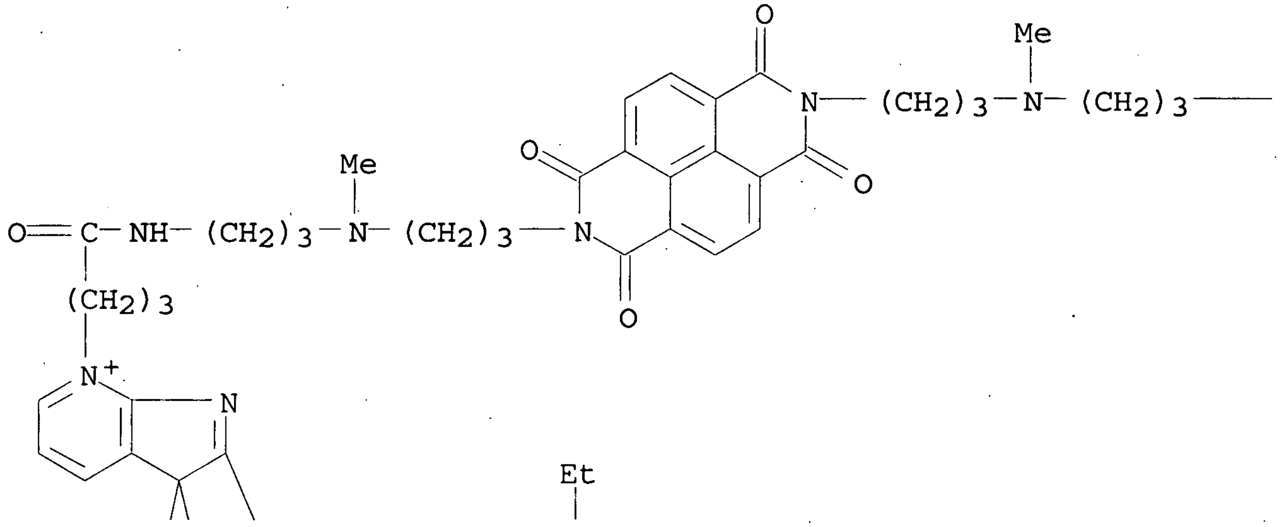
RL: **ARG (Analytical reagent use)**; **ANST (Analytical study)**; USES (Uses)

(FRET-based **detection** of **nucleic acids** using luminescent **indicators** with high affinity for multiplex nucleic acid complex)

RN 497239-56-2 HCAPLUS

CN 3H-Pyrrolo[2,3-b]pyridinium, 7,7'-[(1,3,6,8-tetrahydro-1,3,6,8-tetraoxobenzo[lmn][3,8]phenanthroline-2,7-diyl)bis[3,1-propanediyl(methylimino)-3,1-propanediylimino(4-oxo-4,1-butanediyl)]]bis[2-[3-(1-ethyl-1,3-dihydro-3,3-dimethyl-5-sulfo-2H-indol-2-ylidene)-1-propenyl]-3,3-dimethyl-, bis(inner salt) (9CI) (CA INDEX NAME)

PAGE 1-A



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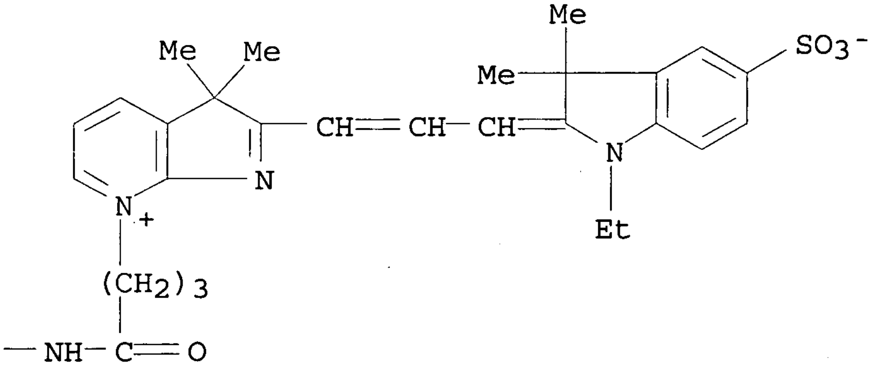

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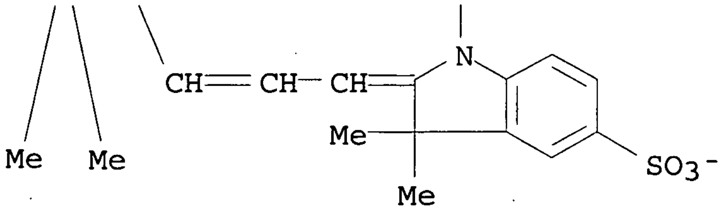


IC ICM C12Q001-68
ICS C07D471-06; G01N021-64; G01N033-483; G01N033-53; G01N033-533; G01N033-566; G01N033-58; C12M001-00; C12N015-09

CC 9-15 (Biochemical Methods)
Section cross-reference(s): 3

ST FRET **nucleic acid** multiplex **detection** luminescent **indicator**; fluorescent **indicator** multiplex **nucleic acid** complex affinity

IT Quaternary structure
(**DNA** triplex, **indicators** with high affinity for; FRET-based **detection** of **nucleic acids** using luminescent **indicators** with high affinity for multiplex nucleic acid complex)

IT Fluorescence resonance energy transfer
Fluorescent indicators
Immobilization, molecular or cellular
Nucleic acid hybridization
(FRET-based **detection** of **nucleic acids** using luminescent **indicators** with high affinity for multiplex nucleic acid complex)

IT **Nucleic acids**
RL: ANT (Analyte); ANST (Analytical study)
(FRET-based **detection** of **nucleic acids** using luminescent **indicators** with high affinity for multiplex nucleic acid complex)

IT Probes (**nucleic acid**)
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(FRET-based **detection** of **nucleic acids** using luminescent **indicators** with high affinity for multiplex nucleic acid complex)

IT Intercalation
(agents; FRET-based **detection** of **nucleic acids** using luminescent **indicators** with high affinity for multiplex nucleic acid complex)

IT **Nucleic acids**

```
     RL: ANT (Analyte); ANST (Analytical study)
        (complexes, indicators with high affinity for;
        FRET-based detection of nucleic acids
        using luminescent indicators with high affinity for
        multiplex nucleic acid complex)
IT   DNA
     RL: ANT (Analyte); ANST (Analytical study)
        (double-stranded, indicators with high affinity for;
        FRET-based detection of nucleic acids
        using luminescent indicators with high affinity for
        multiplex nucleic acid complex)
IT   Oligonucleotides
     RL: ARG (Analytical reagent use); ANST (Analytical study); USES
     (Uses)
        (immobilized, probes; FRET-based detection of
        nucleic acids using luminescent
        indicators with high affinity for multiplex nucleic acid
        complex)
IT   Chromophores
        (indicators contg.; FRET-based detection of
        nucleic acids using luminescent
        indicators with high affinity for multiplex nucleic acid
        complex)
IT   497227-46-0   497227-47-1 497239-56-2 497239-57-3
     RL: ARG (Analytical reagent use); ANST (Analytical
     study); USES (Uses)
        (FRET-based detection of nucleic
        acids using luminescent indicators with high
        affinity for multiplex nucleic acid complex)
IT   497316-99-1
     RL: PRP (Properties)
        (unclaimed nucleotide sequence; fRET-based detection of
        nucleic acids using luminescent
        indicators with high affinity for multiplex nucleic acid
        complex)

L25  ANSWER 16 OF 30  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         2003:141230  HCAPLUS
DOCUMENT NUMBER:          138:166250
TITLE:                    FRET-based detection of
                          nucleic acids using
                          luminescent indicators with high
                          affinity for multiplex nucleic acid complex
INVENTOR(S):              Nakamura, Takemare
PATENT ASSIGNEE(S):       Fuji Photo Film Co., Ltd., Japan
```

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
JP 2003052397	A2	20030225	JP 2001-247535		20010817
US 2003165918	A1	20030904	US 2002-219671		20020816
PRIORITY APPLN. INFO.:			JP 2001-247535	A	20010817
			JP 2001-247536	A	20010817
			JP 2001-247538	A	20010817

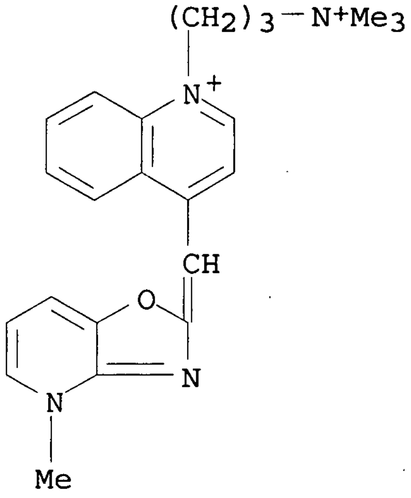
AB A method for **detection** of **nucleic acids** using hybridization probes and at least a pair of luminescent compds. having higher affinity for duplex or triplex nucleic acid complex than to single-stranded forms are described. At least one of the luminescent compds. is an intercalating agent. Fluorescent compds. of this invention provided a much higher signal to noise ratio due to fluorescence resonance energy transfer (FRET) compared to the ref. compds. when used in combination with immobilized probes.

IT **497227-45-9**
RL: **ARG (Analytical reagent use)**; **ANST (Analytical study)**; USES (Uses)
(FRET-based **detection** of **nucleic acids** using luminescent **indicators** with high affinity for multiplex nucleic acid complex)

RN 497227-45-9 HCAPLUS

CN Quinolinium, 4-[(4-methyloxazolo[4,5-b]pyridin-2(4H)-ylidene)methyl]-

1-[3-(trimethylammonio)propyl]-, dibromide (9CI) (CA INDEX NAME)



●2 Br⁻

IC ICM C12Q001-68
ICS G01N033-53; G01N033-566; C12M001-00; C12N015-09
CC 9-15 (Biochemical Methods)
Section cross-reference(s): 3
ST FRET **nucleic acid** multiplex **detection** luminescent **indicator**
IT Quaternary structure
(**DNA** triplex, **indicators** with high affinity for; FRET-based **detection** of **nucleic acids** using luminescent **indicators** with high affinity for multiplex nucleic acid complex)
IT Fluorescence resonance energy transfer
Fluorescent indicators
Immobilization, molecular or cellular
Nucleic acid hybridization
(FRET-based **detection** of **nucleic acids** using luminescent **indicators** with high affinity for multiplex nucleic acid complex)
IT **Nucleic acids**
RL: ANT (Analyte); ANST (Analytical study)
(FRET-based **detection** of **nucleic**

```
      acids using luminescent indicators with high
      affinity for multiplex nucleic acid complex)
IT   Probes (nucleic acid)
     RL: ARG (Analytical reagent use); ANST (Analytical study); USES
     (Uses)
        (FRET-based detection of nucleic
        acids using luminescent indicators with high
        affinity for multiplex nucleic acid complex)
IT   Intercalation
        (agents; FRET-based detection of nucleic
        acids using luminescent indicators with high
        affinity for multiplex nucleic acid complex)
IT   Nucleic acids
     RL: ANT (Analyte); ANST (Analytical study)
        (complexes, indicators with high affinity for;
        FRET-based detection of nucleic acids
        using luminescent indicators with high affinity for
        multiplex nucleic acid complex)
IT   DNA
     RL: ANT (Analyte); ANST (Analytical study)
        (double-stranded, indicators with high affinity for;
        FRET-based detection of nucleic acids
        using luminescent indicators with high affinity for
        multiplex nucleic acid complex)
IT   Oligonucleotides
     RL: ARG (Analytical reagent use); ANST (Analytical study); USES
     (Uses)
        (immobilized, probes; FRET-based detection of
        nucleic acids using luminescent
        indicators with high affinity for multiplex nucleic acid
        complex)
IT   Chemiluminescent substances
        (indicators contg.; FRET-based detection of
        nucleic acids using luminescent
        indicators with high affinity for multiplex nucleic acid
        complex)
IT   497227-45-9   497227-46-0   497227-47-1   497227-48-2
     RL: ARG (Analytical reagent use); ANST (Analytical
     study); USES (Uses)
        (FRET-based detection of nucleic
        acids using luminescent indicators with high
        affinity for multiplex nucleic acid complex)
IT   497316-98-0
     RL: PRP (Properties)
        (unclaimed nucleotide sequence; fRET-based detection of
```

nucleic acids using luminescent
indicators with high affinity for multiplex nucleic acid
complex)

L25 ANSWER 17 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:	2003:141221 HCAPLUS
DOCUMENT NUMBER:	138:166249
TITLE:	Fluorescent indicators with high affinity for multiplex **nucleic acid** complex for **detection** of **nucleic acids** via hybridization
INVENTOR(S):	Nakamura, Takeki
PATENT ASSIGNEE(S):	Fuji Photo Film Co., Ltd., Japan
SOURCE:	Jpn. Kokai Tokkyo Koho, 12 pp. CODEN: JKXXAF
DOCUMENT TYPE:	Patent
LANGUAGE:	Japanese
FAMILY ACC. NUM. COUNT:	1
PATENT INFORMATION:	

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003052377	A2	20030225	JP 2001-247537	20010817
PRIORITY APPLN. INFO.:			JP 2001-247537	20010817

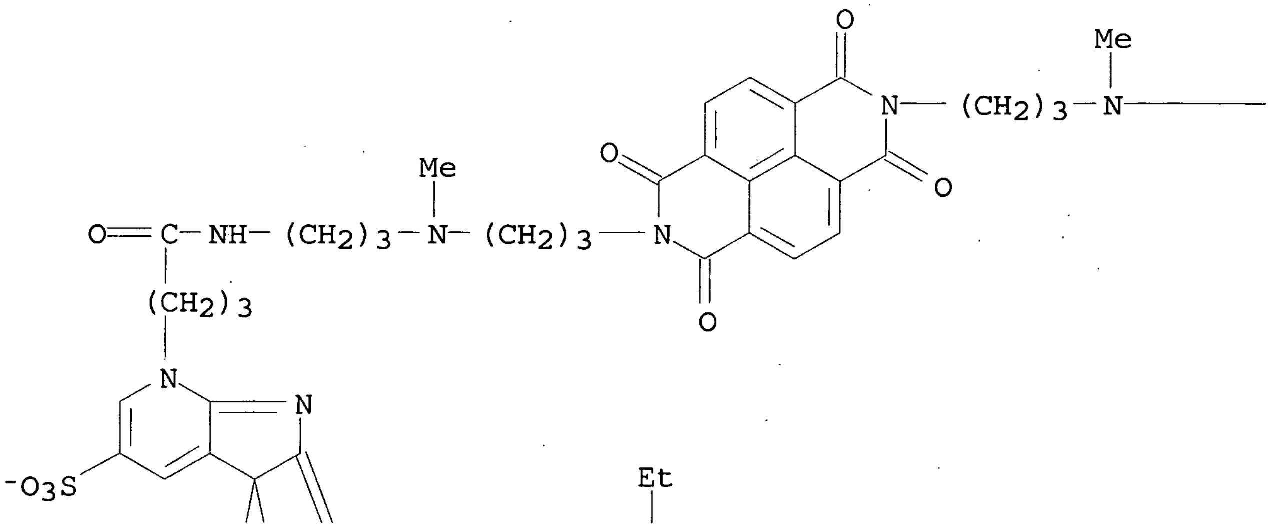
AB A method for **detection** of **nucleic acids** using hybridization probes and at least a pair of fluorescent indicators having higher affinity for duplex or triplex nucleic acid complex than to single-stranded forms are described. Fluorescent compds. of this invention provided a much higher signal to noise ratio compared to the ref. compds. when used in combination with immobilized probes.

IT **497237-88-4**
RL: **ARG (Analytical reagent use); ANST (Analytical study)**; USES (Uses)
(fluorescent indicators with high affinity for multiplex **nucleic acid** complex for **detection** of **nucleic acids** via hybridization)

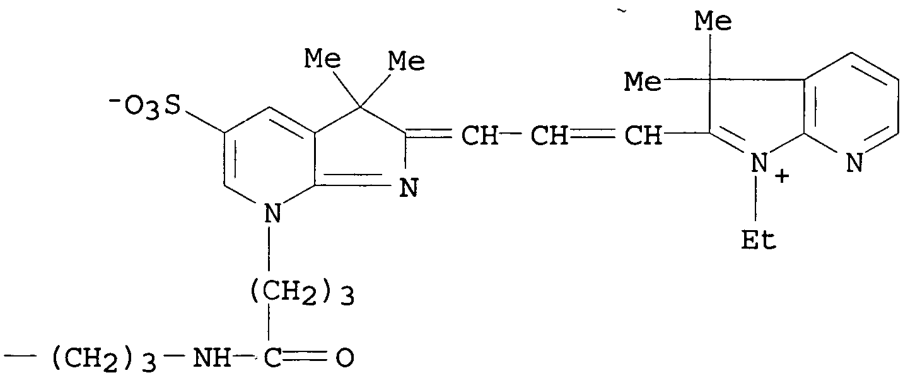
RN 497237-88-4 HCAPLUS

CN 3H-Pyrrolo[2,3-b]pyridinium, 2,2'-[(1,3,6,8-tetrahydro-1,3,6,8-tetraoxobenzo[lmn][3,8]phenanthroline-2,7-diyl)bis[3,1-propanediyl(methylimino)-3,1-propanediylimino(4-oxo-4,1-butanediyl)(3,3-dimethyl-5-sulfo-2H-pyrrolo[2,3-b]pyridin-7(3H)-yl-2-ylidene)-1-propen-1-yl-3-ylidene]]bis[1-ethyl-3,3-dimethyl-, bis(inner salt) (9CI) (CA INDEX NAME)

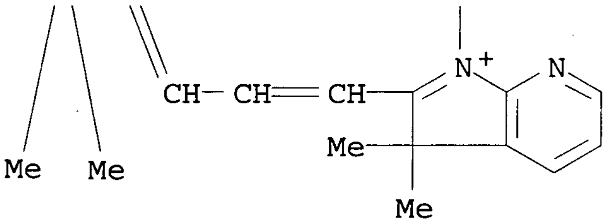
PAGE 1-A



PAGE 1-B



PAGE 2-A



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IC   ICM  C12N015-09
     ICS  C12Q001-68; G01N021-78; G01N033-53; G01N033-566; G01N037-00
CC   9-15 (Biochemical Methods)
     Section cross-reference(s): 3
ST   fluorescent indicator multiplex nucleic
     acid complex affinity
IT   Quaternary structure
        (DNA triplex, indicators with high affinity
        for; fluorescent indicators with high affinity for multiplex
        nucleic acid complex for detection of
        nucleic acids via hybridization)
IT   Nucleic acids
     RL: ANT (Analyte); ANST (Analytical study)
        (complexes, indicators with high affinity for;
        fluorescent indicators with high affinity for multiplex
        nucleic acid complex for detection of
        nucleic acids via hybridization)
IT   DNA
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     RL: ANT (Analyte); ANST (Analytical study)
        (double-stranded, indicators with high affinity for;
        fluorescent indicators with high affinity for multiplex
        nucleic acid complex for detection of
        nucleic acids via hybridization)
IT   Fluorescent indicators
     Immobilization, molecular or cellular
        (fluorescent indicators with high affinity for multiplex
        nucleic acid complex for detection of
        nucleic acids via hybridization)
IT   Nucleic acids
     RL: ANT (Analyte); ANST (Analytical study)
        (fluorescent indicators with high affinity for
        multiplex nucleic acid complex for
        detection of nucleic acids via
        hybridization)
IT   Probes (nucleic acid)
     RL: ARG (Analytical reagent use); ANST (Analytical study); USES
     (Uses)
        (fluorescent indicators with high affinity for
        multiplex nucleic acid complex for
        detection of nucleic acids via
        hybridization)
IT   Oligonucleotides
     RL: ARG (Analytical reagent use); ANST (Analytical study); USES
     (Uses)
        (immobilized, probes; fluorescent indicators with high affinity
        for multiplex nucleic acid complex for
        detection of nucleic acids via
        hybridization)
IT   Chromophores
        (indicators contg.; fluorescent indicators with high affinity for
        multiplex nucleic acid complex for
        detection of nucleic acids via
        hybridization)
IT   497227-46-0   497227-47-1 497237-88-4 497237-89-5
     RL: ARG (Analytical reagent use); ANST (Analytical
     study); USES (Uses)
        (fluorescent indicators with high affinity for multiplex
        nucleic acid complex for detection of
        nucleic acids via hybridization)

L25  ANSWER 18 OF 30  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         2003:94436  HCAPLUS
DOCUMENT NUMBER:          138:166220
```

TITLE: Method for **detecting RNA** using dye
INVENTOR(S): Nakamura, Koki
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

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     PATENT NO.          KIND    DATE        APPLICATION NO.        DATE
     ---------------     ----    --------    --------------------
     --------
     JP 2003035709        A2     20030207    JP 2001-219214
                                                                    200107
                                                                    19
PRIORITY APPLN. INFO.:                       JP 2001-219214
                                                                    200107
                                                                    19
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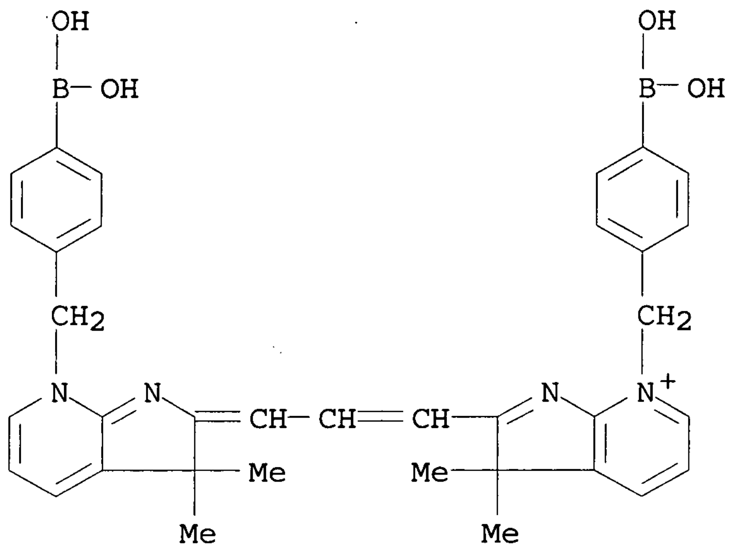
AB A convenient method is provided for rapidly **detecting RNA** with high sensitivity using a luminescent compd. In this method, RNA present in a soln. or a solid, or on a solid phase carrier is optically detected. The method comprises: (1) a process for obtaining a complex of RNA with a dye which is selected from a group of cyanine dyes, oxonol dyes, and xanthene dyes, and possesses more than two boronic acid groups; and (2) a process for optically detecting the complex.

IT **494796-97-3P**
RL: **ARG (Analytical reagent use)**; SPN (Synthetic preparation); **ANST (Analytical study)**; PREP (Preparation); USES (Uses)
(method for **detecting RNA** using dye)

RN 494796-97-3 HCAPLUS

CN 3H-Pyrrolo[2,3-b]pyridinium, 7-[(4-boronophenyl)methyl]-2-[3-[7-[(4-boronophenyl)methyl]-3,7-dihydro-3,3-dimethyl-2H-pyrrolo[2,3-b]pyridin-2-ylidene]-1-propenyl]-3,3-dimethyl-, bromide (9CI) (CA INDEX NAME)



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IC ICM G01N033-53
ICS C12Q001-68; G01N021-78; G01N033-566; G01N033-58; C12N015-09
CC 9-5 (Biochemical Methods)
ST **RNA detection** fluorescent dye boronic acid
IT Functional groups
(boronic acid; method for **detecting RNA** using dye)
IT Luminescent substances
(dyes; method for **detecting RNA** using dye)
IT Dyes
(luminescent; method for **detecting RNA** using dye)
IT Cyanine dyes
Fluorescent dyes
(method for **detecting RNA** using dye)
IT **RNA**
RL: ANT (Analyte); ANST (Analytical study)
(method for **detecting RNA** using dye)
IT 496892-43-4
RL: PRP (Properties)
(Unclaimed; method for **detecting RNA** using dye)

IT 92-83-1, Xanthene
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(dye; method for **detecting RNA** using dye)
IT 494796-95-1P **494796-97-3P**
RL: **ARG (Analytical reagent use)**; SPN (Synthetic preparation); **ANST (Analytical study)**; PREP (Preparation); USES (Uses)
(method for **detecting RNA** using dye)

L25 ANSWER 19 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

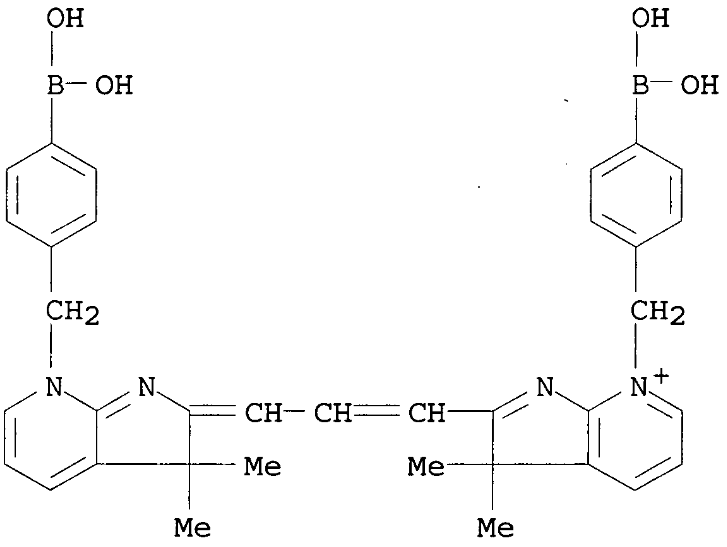
ACCESSION NUMBER:	2003:94434 HCAPLUS
DOCUMENT NUMBER:	138:166219
TITLE:	Method for **detecting nucleic acid** using luminescent substance
INVENTOR(S):	Nakamura, Takeki
PATENT ASSIGNEE(S):	Fuji Photo Film Co., Ltd., Japan
SOURCE:	Jpn. Kokai Tokkyo Koho, 15 pp. CODEN: JKXXAF
DOCUMENT TYPE:	Patent
LANGUAGE:	Japanese
FAMILY ACC. NUM. COUNT:	1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003035708	A2	20030207	JP 2001-219213	20010719
PRIORITY APPLN. INFO.:			JP 2001-219213	20010719

AB A convenient method is provided for rapidly detecting a trace component such nucleic acid with high sensitivity using a luminescent compd. In this method, a detection objective substance such as **nucleic acid** is optically **detected.** The method comprises: (1) a process for obtaining a bound substance of the detection objective substance with a compd. possessing more than 20 hydroxyl groups; (2) a process for obtaining a complex of the bound substance obtained in the process (1) with a luminescent substance such as a cyanine dye, oxonol dye, or xanthene dye, possessing more than two boronic acid groups; and (3) a process for optically detecting the complex.

IT **494796-97-3P**
RL: **ARG (Analytical reagent use)**; SPN (Synthetic preparation); **ANST (Analytical study)**; PREP (Preparation); USES (Uses)
(method for **detecting nucleic acid** using luminescent substance)
RN 494796-97-3 HCAPLUS
CN 3H-Pyrrolo[2,3-b]pyridinium, 7-[(4-boronophenyl)methyl]-2-[3-[7-[(4-boronophenyl)methyl]-3,7-dihydro-3,3-dimethyl-2H-pyrrolo[2,3-b]pyridin-2-ylidene]-1-propenyl]-3,3-dimethyl-, bromide (9CI) (CA INDEX NAME)



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IC ICM G01N033-53
ICS C12N015-09; C12Q001-68; G01N021-78; G01N033-566; G01N033-58
CC 9-5 (Biochemical Methods)
ST **nucleic acid detection** luminescent substance boronic acid polyol
IT Functional groups
(boronic acid; method for **detecting RNA** using dye)
IT Luminescent substances
(dyes; method for **detecting RNA** using dye)

IT Dyes
(luminescent; method for **detecting RNA** using
dye)

IT Cyanine dyes
Fluorescent dyes
Trace **analysis**
(method for **detecting RNA** using dye)

IT **RNA**
RL: ANT (Analyte); ANST (Analytical study)
(method for **detecting RNA** using dye)

IT Alcohols, uses
RL: ARG (Analytical reagent use); ANST (Analytical study); USES
(Uses)
(polyhydric; method for **detecting RNA** using
dye)

IT 92-83-1, Xanthene
RL: ARG (Analytical reagent use); ANST (Analytical study); USES
(Uses)
(dye; method for **detecting nucleic**
acid using luminescent substance)

IT 494796-95-1P **494796-97-3P**
RL: **ARG (Analytical reagent use)**; SPN (Synthetic
preparation); **ANST (Analytical study)**; PREP (Preparation);
USES (Uses)
(method for **detecting nucleic acid**
using luminescent substance)

L25 ANSWER 20 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:94125 HCAPLUS
DOCUMENT NUMBER: 138:170463
TITLE: Azamethine dye fluorescent nucleotide as label for nucleic acid
INVENTOR(S): Nishigaki, Junji; Takeuchi, Kazuya; Inomata, Hiroko; Kojima, Masayoshi
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 23 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

JP 2003034697 A2 20030207 JP 2001-219212 20010719

PRIORITY APPLN. INFO.: JP 2001-219212 20010719

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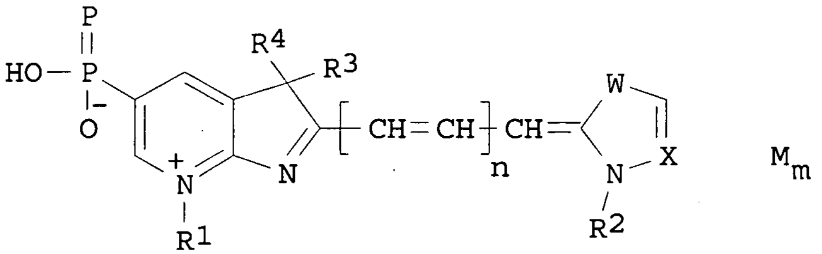

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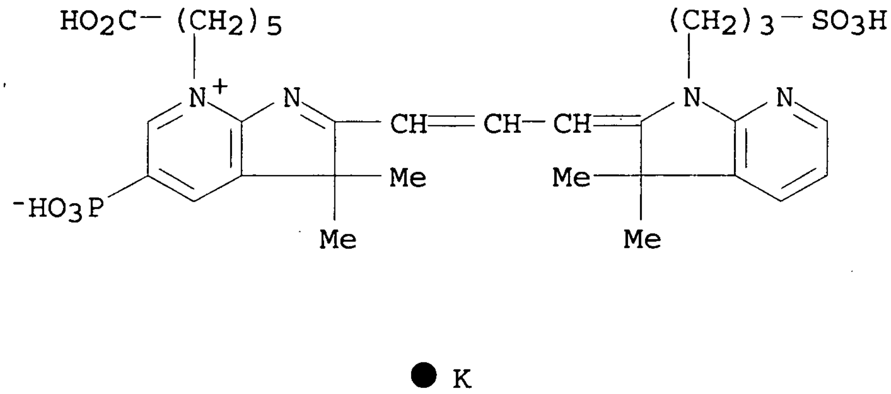
AB Azamethine dye-based fluorescent nucleotides having a general formula X-Y-Z (X = natural or nonnatural nucleotide, oligonucleotide, or polynucleotide, or derivs., and binds to Y; Y = CH2, CH=CH, C.tplbond.C, C:O, O, S, NH, or combination; Z = I) are provided. In I R1-R4 = (substituted)alkyl; n = 0,1,2,3; M = counter ion; m = quantity necessary to neutralize the elec. charge of the mol.; W = O, S, N, alkyl-N, C, alkyl or dialkyl C, or W =C and ring is fused to (substituted)phenyl or pyridyl ring; X = O, S, N, CH2, or X = C and ring is fused to Ph ring. Nucleic acid probes or primers labeled with the above fluorescent nucleotide as part of reagent kit for **nucleic acid detection** and **diagnosis**, are claimed. Prepn. of fluorescent labeled nucleic acid by reverse transcription, terminal transferase reaction, random prime method, PCR, or nick translation method, is claimed. Synthesis of the fluorescent nucleotides and their dUTP conjugates are described as well as prepn. of DNA probes via reverse transcription.

IT **494845-01-1P**
RL: **ARG (Analytical reagent use)**; BUU (Biological use, unclassified); **ANST (Analytical study)**; SPN (Synthetic preparation); **ANST (Analytical study)**; BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(azamethine dye fluorescent nucleotide as label for nucleic acid)

RN 494845-01-1 HCAPLUS

CN 3H-Pyrrolo[2,3-b]pyridinium, 7-(5-carboxypentyl)-2-[3-[1,3-dihydro-3,3-dimethyl-1-(3-sulfopropyl)-2H-pyrrolo[2,3-b]pyridin-2-ylidene]-1-propenyl]-3,3-dimethyl-5-phosphono-, inner salt, monopotassium salt (9CI) (CA INDEX NAME)



IC ICM C07H019-10
ICS C07H019-20; C07H021-04; C12N015-09; C12Q001-68; G01N021-78; G01N033-58

CC 33-9 (Carbohydrates)
Section cross-reference(s): 3, 9

IT **494845-01-1P** **494845-02-2P** **494845-03-3P**
494845-04-4P **494845-05-5P** **494845-06-6P**
494845-07-7P **494845-08-8P** **494845-09-9P**
494845-10-2P **494845-11-3P** **494845-12-4P**
494845-13-5P **494845-14-6P** 494845-15-7P
494845-16-8P 494845-17-9P 494845-18-0P 494845-19-1P
494845-20-4P 494845-21-5P 494845-22-6P 494845-23-7P
494845-24-8P 494845-25-9P 494845-26-0P 494845-27-1P
494845-28-2P **494845-29-3P** **494845-30-6P**
494845-31-7P 494845-32-8P **494845-33-9P**
494845-34-0P 494845-35-1P 494845-36-2P
RL: **ARG (Analytical reagent use)**; BUU (Biological use, unclassified); RCT (Reactant); SPN (Synthetic preparation); **ANST (Analytical study)**; BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(azamethine dye fluorescent nucleotide as label for nucleic acid)

IT 56-65-5DP, 5'-ATP, conjugates 58-64-0DP, 5'-ADP, conjugates
58-97-9DP, 5'-UMP, conjugates 58-98-0DP, 5'-UDP, conjugates

61-19-8DP, 5'-AMP, conjugates 63-37-6DP, CMP, conjugates
63-38-7DP, CDP, conjugates 63-39-8DP, 5'-UTP, conjugates
65-47-4DP, 5'-CTP, conjugates 85-32-5DP, 5'-GMP, conjugates
86-01-1DP, 5'-GTP, conjugates 146-91-8DP, 5'-GDP, conjugates
365-07-1DP, DTMP, conjugates 491-97-4DP, TDP, conjugates
1173-82-6DP, DUTP, conjugates 1969-54-6DP, TPT, conjugates
3590-36-1DP, conjugates 20309-92-6DP, conjugates 39923-67-6DP,
conjugates 39923-68-7DP, conjugates 42467-24-3DP, conjugates
52940-67-7DP, conjugates 52988-98-4DP, conjugates 76528-21-7DP,
conjugates 80677-38-9DP, conjugates 112242-04-3DP, conjugates
327174-86-7DP, conjugates 366451-24-3DP, conjugates
494845-42-0P **494845-43-1P** 494845-44-2P
494845-45-3P **494845-46-4P**
RL: **ARG (Analytical reagent use)**; SPN (Synthetic
preparation); **ANST (Analytical study)**; PREP (Preparation);
USES (Uses)
(azamethine dye fluorescent nucleotide as label for nucleic acid)

IT 494845-38-4P 494845-39-5P **494845-41-9P** 494845-47-5P
494845-48-6P 494845-50-0P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
RACT (Reactant or reagent)
(azamethine dye fluorescent nucleotide as label for nucleic acid)

L25 ANSWER 21 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:94124 HCAPLUS
DOCUMENT NUMBER: 138:170462
TITLE: Azamethine dye fluorescent nucleotide as label for nucleic acid
INVENTOR(S): Nishigaki, Junji; Nakamura, Koki; Takeuchi, Kazuya; Inomata, Hiroko; Kojima, Masayoshi
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 25 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003034696	A2	20030207	JP 2001-219211	20010719
US 2003113755	A1	20030619	US 2002-196223	

200207
17

PRIORITY APPLN. INFO.: JP 2001-219211 A
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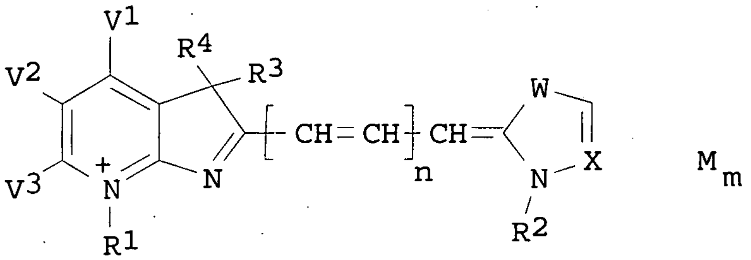

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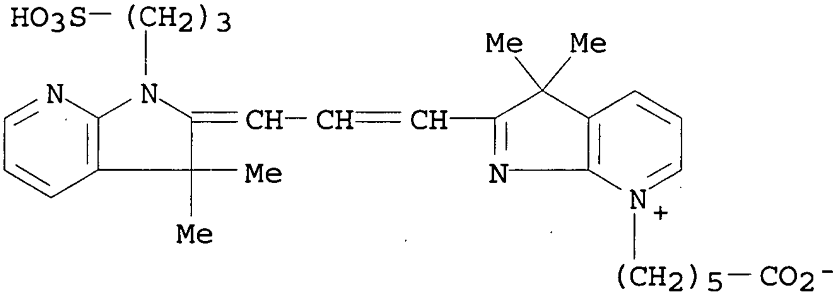
AB Azamethine dye-based fluorescent nucleotides having a general formula X-Y-Z (X = natural or nonnatural nucleotide, oligonucleotide, or polynucleotide, or derivs., and binds to Y; Y = CH2, CH=CH, C.tplbond.C, C:O, O, S, NH, or combination; Z = I) are provided. In I R1-R4 = (substituted)alkyl; V1-V3 = H, substituent; n = 0,1,2,3; W = N, O, S, alkyl-N, aryl-N, dialkyl-C, or W = C and the ring is fused to a Ph ring; X = O, S, C, N, or X = C and ring is fused to pyridyl or Ph ring; M = counter ion; m = quantity necessary to neutralize the elec. charge of the mol. Nucleic acid probes or primers labeled with the above fluorescent nucleotide as part of reagent kit for **nucleic acid detection** and **diagnosis**, are claimed. Prepn. of fluorescent labeled nucleic acid by reverse transcription, terminal transferase reaction, random prime method, PCR, or nick translation method, is claimed. Synthesis of the fluorescent nucleotides and their dUTP conjugates are described as well as prepn. of DNA probes via reverse transcription.

IT **494842-65-8P**
RL: **ARG (Analytical reagent use)**; BUU (Biological use, unclassified); **ANST (Analytical study)**; SPN (Synthetic preparation); **ANST (Analytical study)**; BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(azamethine dye fluorescent nucleotide as label for nucleic acid)

RN 494842-65-8 HCAPLUS

CN 3H-Pyrrolo[2,3-b]pyridinium, 7-(5-carboxypentyl)-2-[3-[1,3-dihydro-

3,3-dimethyl-1-(3-sulfopropyl)-2H-pyrrolo[2,3-b]pyridin-2-ylidene]-1-propenyl]-3,3-dimethyl-, inner salt (9CI) (CA INDEX NAME)



IC ICM C07H019-10
ICS C07D471-04; C07D498-04; C07D513-04; C07H019-20; C07H021-02; C07H021-04; C12N015-09; C12Q001-68; G01N033-53; G01N033-533; G01N033-566

CC 33-9 (Carbohydrates)
Section cross-reference(s): 3, 9

IT **494842-65-8P** **494842-66-9P** **494842-67-0P**
494842-68-1P **494842-69-2P** **494842-70-5P**
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494843-11-7P **494843-13-9P** **494843-14-0P**
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494843-18-4P **494843-19-5P** 494843-21-9P
494843-22-0P 494843-23-1P
RL: **ARG (Analytical reagent use)**; BUU (Biological use, unclassified); RCT (Reactant); SPN (Synthetic preparation); **ANST (Analytical study)**; BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(azamethine dye fluorescent nucleotide as label for nucleic acid)

IT 56-65-5DP, 5'-ATP, conjugates 58-64-0DP, 5'-ADP, conjugates
58-97-9DP, 5'-UMP, conjugates 58-98-0DP, 5'-UDP, conjugates
61-19-8DP, 5'-AMP, conjugates 63-37-6DP, CMP, conjugates
63-38-7DP, CDP, conjugates 63-39-8DP, 5'-UTP, conjugates

65-47-4DP, 5'-CTP, conjugates 85-32-5DP, 5'-GMP, conjugates
86-01-1DP, 5'-GTP, conjugates 146-91-8DP, 5'-GDP, conjugates
365-07-1DP, DTMP, conjugates 365-08-2DP, TTP, conjugates
491-97-4DP, TDP, conjugates 1173-82-6DP, DUTP, conjugates
3590-36-1DP, conjugates 20309-92-6DP, conjugates 39923-67-6DP,
conjugates 39923-68-7DP, conjugates 42467-24-3DP, conjugates
52940-67-7DP, conjugates 52988-98-4DP, conjugates 76528-21-7DP,
conjugates 80677-38-9DP, conjugates 112242-04-3DP, conjugates
327174-86-7DP, conjugates 366451-24-3DP, conjugates
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RL: **ARG (Analytical reagent use)**; SPN (Synthetic
preparation); **ANST (Analytical study)**; PREP (Preparation);
USES (Uses)
(azamethine dye fluorescent nucleotide as label for nucleic acid)

L25 ANSWER 22 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:978029 HCAPLUS
DOCUMENT NUMBER: 138:50812
TITLE: Conditions for formation of three- and four-stranded **nucleic acid** complexes and their **detection** and analytical use
INVENTOR(S): Erikson, Glen H.; Daksis, Jasmine I.; Kandic, Ivana; Picard, Pierre
PATENT ASSIGNEE(S): Ingeneus Corporation, Barbados
SOURCE: PCT Int. Appl., 122 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 15
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002103051	A2	20021227	WO 2002-IB1972	20020531
WO 2002103051	A3	20040429		

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GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,
LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ,

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        RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,
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PRIORITY APPLN. INFO.:                        US 2001-885731      A
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                                              US 1999-468679      A2
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                                              US 2000-613263      A2
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                                              US 2000-664827      A2
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                                              WO 2002-IB1972      W
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AB    Methods of stimulating formation of nucleic acid triplexes and
      quadruplexes and methods of detecting using intercalating and
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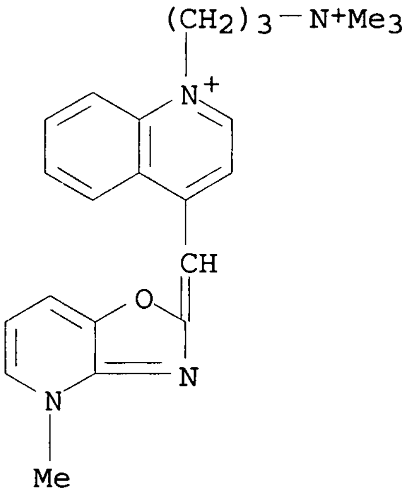
non-intercalating fluorescent dyes are described. Conditions promoting the stable formation of triplexes and quadruplexes using Hoogsten base pairing are described. These complexes may be used in the detection of a double-stranded nucleic acid. Expts. optimizing conditions as a function of sequence length and bas compn. are reported.

IT **305801-86-9**, JO-PRO-1
RL: **ARG (Analytical reagent use)**; **ANST (Analytical study)**; USES (Uses)
(for **detection** of **nucleic acid** multiplexes; conditions for formation of three- and four-stranded **nucleic acid** complexes and their **detection** and anal. use)

RN 305801-86-9 HCAPLUS

CN Quinolinium, 4-[(4-methyloxazolo[4,5-b]pyridin-2(4H)-ylidene)methyl]-1-[3-(trimethylammonio)propyl]-, diiodide (9CI) (CA INDEX NAME)



●2 I⁻

IC ICM C12Q001-68

CC 3-1 (Biochemical Genetics)
Section cross-reference(s): 6, 9

ST **DNA** triplex quadruplex formation **detection**; ionic strength cation DNA triplex quadruplex formation; dye binding **DNA** triplex quadruplex **detection**

IT Quaternary structure
(DNA triplex, formation and use of; conditions for formation of three- and four-stranded **nucleic acid** complexes and their **detection** and anal. use)

IT Dyes
(SYTO, SYBR, SYTOX, ALEXA for **detection** of **nucleic acid** multiplexes; conditions for formation of three- and four-stranded **nucleic acid** complexes and their **detection** and anal. use)

IT Intercalation
(agents, fluorescent dyes, for **detection** of **nucleic acid** multiplexes; conditions for formation of three- and four-stranded **nucleic acid** complexes and their **detection** and anal. use)

IT Nucleic acid hybridization
(conditions for formation of three- and four-stranded **nucleic acid** complexes and their **detection** and anal. use)

IT **DNA**
RL: ANT (Analyte); PEP (Physical, engineering or chemical process); PYP (Physical process); ANST (Analytical study); PROC (Process)
(double-stranded, **detection** by triplex or quadruplex formation of; conditions for formation of three- and four-stranded **nucleic acid** complexes and their **detection** and anal. use)

IT Cyanine dyes
Fluorescent dyes
(for **detection** of **nucleic acid** multiplexes; conditions for formation of three- and four-stranded **nucleic acid** complexes and their **detection** and anal. use)

IT Fluorometry
(for **detection** of **nucleic acids** and quadruplexes; conditions for formation of three- and four-stranded **nucleic acid** complexes and their **detection** and anal. use)

IT Ionic strength
(in multistrand nucleic acid formation; conditions for formation of three- and four-stranded **nucleic acid** complexes and their **detection** and anal. use)

IT Cations
(monovalent, concn. of, effects on triplex and quadruplex stability of; conditions for formation of three- and

four-stranded **nucleic acid** complexes and
their **detection** and anal. use)

IT Temperature effects, biological
(on triplex and quadruplex stability of; conditions for formation of three- and four-stranded **nucleic acid** complexes and their **detection** and anal. use)

IT DNA
RL: ARU (Analytical role, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); ANST (Analytical study); PROC (Process)
(quadruplex, formation of; conditions for formation of three- and four-stranded **nucleic acid** complexes and their **detection** and anal. use)

IT DNA
RL: ARG (Analytical reagent use); PEP (Physical, engineering or chemical process); PYP (Physical process); ANST (Analytical study); PROC (Process); USES (Uses)
(single-stranded, in triplex or quadruplex formation; conditions for formation of three- and four-stranded **nucleic acid** complexes and their **detection** and anal. use)

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RL: MOA (Modifier or additive use); USES (Uses)
(concn. of, effects on triplex and quadruplex stability of; conditions for formation of three- and four-stranded **nucleic acid** complexes and their **detection** and anal. use)

IT 58-85-5, Biotin 65-61-2, Acridine orange 81-88-9 260-94-6, Acridine 260-94-6D, Acridine, derivs. 261-23-4D, Xanthylium, derivs. 1239-45-8, Ethidium bromide 2321-07-5D, Fluorescein, derivs. 3546-21-2D, Ethidium, derivs. 7240-37-1, 7-Aminoactinomycin D 25535-16-4, Propidium iodide 58880-05-0, Ethidium monoazide 61926-22-5, Ethidium homodimer 1 68942-32-5, Ethidium-acridine heterodimer 138026-71-8D, BODIPY, derivs. 143413-84-7, TOTO-1 143413-85-8, YOYO-1 152068-09-2, YO-PRO-1 154757-99-0, POPO-3 156312-20-8, YOYO-3 157199-56-9, PO-PRO-1 157199-57-0, BO-PRO-1 157199-59-2, TO-PRO-1 157199-62-7, YO-PRO-3 157199-63-8, TO-PRO-3 161016-55-3, PO-PRO-3 166196-17-4, TOTO-3 169454-13-1, BOBO-1 169454-15-3, POPO-1 169454-17-5, BOBO-3 173357-16-9, BO-PRO-3 177027-61-1, TO-PRO-5 177571-06-1, Pico Green 180389-01-9, Ethidium homodimer 2

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      189200-71-3, Rhodamine Green   195136-58-4D, Oregon Green 488,
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      305801-87-0, JOJO-1 305802-06-6, LOLO-1
      305802-07-7, LO-PRO-1
      RL: ARG (Analytical reagent use); ANST (Analytical
      study); USES (Uses)
         (for detection of nucleic acid
         multiplexes; conditions for formation of three- and four-stranded
         nucleic acid complexes and their
         detection and anal. use)
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      479470-24-1   479470-25-2   479470-26-3   479470-27-4   479470-28-5
      479471-14-2
      RL: PRP (Properties)
         (unclaimed nucleotide sequence; conditions for formation of
         three- and four-stranded nucleic acid
         complexes and their detection and anal. use)
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      RL: PRP (Properties)
         (unclaimed sequence; conditions for formation of three- and
         four-stranded nucleic acid complexes and
         their detection and anal. use)

L25  ANSWER 23 OF 30  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:        2002:185639  HCAPLUS
DOCUMENT NUMBER:         136:258263
TITLE:                   Parallel or antiparallel, homologous or
                         complementary binding of nucleic acids or
                         analogues thereof to form duplex, triplex or
                         quadruplex complexes
INVENTOR(S):             Erikson, Glen H.; Daksis, Jasmine I.; Kandic,
                         Ivana; Picard, Pierre
PATENT ASSIGNEE(S):      Ingeneus Corp., Turks/Caicos I.
SOURCE:                  U.S. Pat. Appl. Publ., 51 pp., Cont.-in-part of
                         U.S. Ser. No. 664,827.
                         CODEN: USXXCO
DOCUMENT TYPE:           Patent
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LANGUAGE:                English
FAMILY ACC. NUM. COUNT:  15
PATENT INFORMATION:

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PRIORITY APPLN. INFO.:                     US 1999-468679      A2
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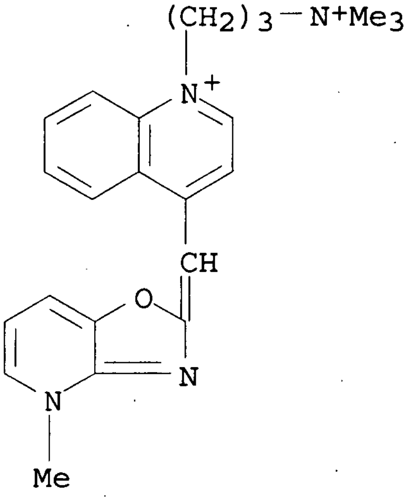
AB Nucleic acid hybridization in which hybridization is measured by detg. the formation of triple or higher order helixes is described. These hybrids bind by methods other than classical Watson-Crick base-pairing, particularly homologous base interaction, and allow the use of probes that can hybridize not only in the classical anti-parallel manner, but also in parallel. Hybridization in these non-std. forms is promoted by the use of intercalating dyes. Optimization of the hybridization and characterization of the complex is demonstrated. A method for assaying a target includes detecting formation of the complex.

IT **305801-86-9**, JO-PRO 1
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(parallel or antiparallel, homologous or complementary binding of nucleic acids or analogs thereof to form duplex, triplex or quadruplex complexes)

RN 305801-86-9 HCAPLUS

CN Quinolinium, 4-[(4-methyloxazolo[4,5-b]pyridin-2(4H)-ylidene)methyl]-1-[3-(trimethylammonio)propyl]-, diiodide (9CI) (CA INDEX NAME)



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IC   ICM  C12Q001-68
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INCL 435006000; X53-6 2.43
CC   3-1 (Biochemical Genetics)
     Section cross-reference(s): 9
ST   homogeneous assay duplex triplex DNA complex;
     antiparallel parallel DNA hybridization; homologous binding nucleic
     acid hybridization duplex triplex quadruplex; fluorometry
     intercalating agent hybridization quantification
IT   65-61-2, Acridine orange   260-94-6D, Acridine, derivs.   1239-45-8,
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     305801-86-9, JO-PRO 1 305801-87-0, JOJO 1
     305802-06-6, LOLO 1 305802-07-7, LO-PRO 1
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RL: BSU (Biological study, unclassified); BIOL (Biological study)
(parallel or antiparallel, homologous or complementary binding of nucleic acids or analogs thereof to form duplex, triplex or quadruplex complexes)

L25 ANSWER 24 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:	2002:154626 HCAPLUS
DOCUMENT NUMBER:	137:64530
TITLE:	**Analysis** of dimeric cyanine-**nucleic acid** dyes by capillary zone electrophoresis in N,N-dimethylacetamide as non-aqueous organic solvent
AUTHOR(S):	Muzikar, Jan; Rozing, Gerard; van de Goor, Tom; Eberwein, Christine; Kenndler, Ernst
CORPORATE SOURCE:	Institute for Analytical Chemistry, University of Vienna, Vienna, 1090, Austria
SOURCE:	Journal of Chromatography, A (2002), 950(1-2), 249-255 CODEN: JCRAEY; ISSN: 0021-9673
PUBLISHER:	Elsevier Science B.V.
DOCUMENT TYPE:	Journal
LANGUAGE:	English

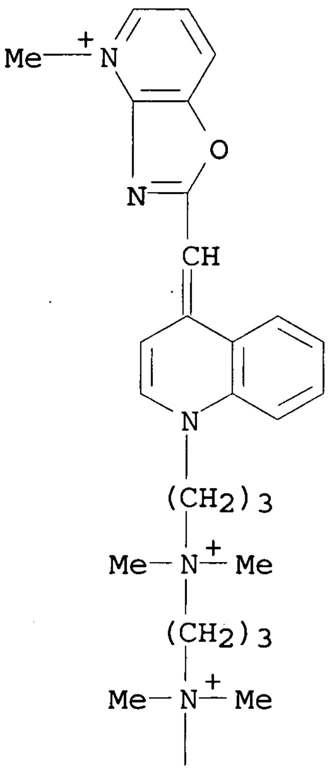
AB A method based on capillary zone electrophoresis is presented for the detn. of the purity of com. dimeric cyanine dyes (TOTO, YOYO, BOBO, all -1 and -3 species, LOLO-1, POPO-1) that are common as fluorescent probes for nucleic acid staining. These dyes are tetracharged cations, and have a strong tendency to interact with neg. charged centers, where they are rapidly adsorbed, esp. from aq. solns. Thus anionic sites at the capillary wall must be avoided, and aq. buffers are not suitable. The method introduced here avoids both complications, using non-aq. N,N-dimethylacetamide as solvent, and suppressing the dissocn. of silanol groups at the capillary surface due to selection of acidic sepn. conditions (20 mmol/l perchloric acid as background electrolyte). The present method enables the detn. of the purity of all 10 dyes in less than 15 min. The selectivity of the method allows sepn. of at least five main and differentiating a no. of unresolved minor contaminants as demonstrated in detail for TOTO-3 as an example. Quantitation (with 100% normalization of the peak areas) of nine lots of this dye results in a purity between 33 and 87%.

IT **305801-87-0**, JOJO 1
RL: ANT (Analyte); **ANST (Analytical study)**
(**anal.** of dimeric cyanine-**nucleic acid** dyes by capillary zone electrophoresis in dimethylacetamide as non-aq. org. solvent)

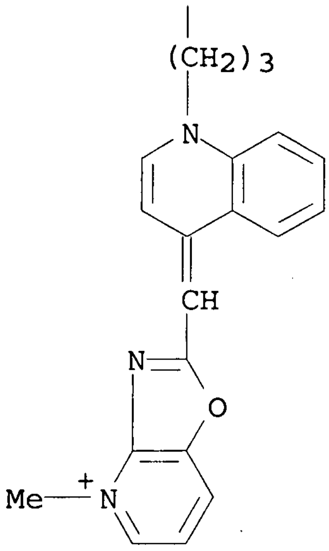
RN 305801-87-0 HCAPLUS

CN Oxazolo[4,5-b]pyridinium, 2,2'-[1,3-propanediylbis[(dimethyliminio)-3,1-propanediyl-1(4H)-quinolinyl-4-ylidenemethylidyne]]bis[4-methyl-, tetraiodide (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



●4 I⁻

CC 41-8 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)
Section cross-reference(s): 80

ST dimeric cyanine **nucleic acid** dye capillary **analysis** dimethylacetamide solvent

IT Dyes
(**anal.** of dimeric cyanine-**nucleic acid** dyes by capillary zone electrophoresis in dimethylacetamide as non-aq. org. solvent)

IT 143413-84-7, TOTO 1 143413-85-8, YOYO 1 154757-99-0, POPO 3
156312-20-8, YOYO 3 169454-13-1, BOBO 1 169454-15-3, POPO 1
169454-17-5, BOBO 3 **305801-87-0**, JOJO 1
305802-06-6, LOLO 1
RL: ANT (Analyte); **ANST (Analytical study)**
(**anal.** of dimeric cyanine-**nucleic acid** dyes by capillary zone electrophoresis in dimethylacetamide as non-aq. org. solvent)

IT 127-19-5, N,N-Dimethylacetamide
RL: NUU (Other use, unclassified); USES (Uses)
(**anal.** of dimeric cyanine-**nucleic acid** dyes by capillary zone electrophoresis in

```
        dimethylacetamide as non-aq. org. solvent)
REFERENCE COUNT:         21    THERE ARE 21 CITED REFERENCES AVAILABLE
                               FOR THIS RECORD. ALL CITATIONS AVAILABLE
                               IN THE RE FORMAT

L25  ANSWER 25 OF 30  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:        2001:228893  HCAPLUS
DOCUMENT NUMBER:         134:266295
TITLE:                   Preparation of azaindole derivatives for
                         fluorescence labeling
INVENTOR(S):             Nishigaki, Junji; Nakamura, Kouki
PATENT ASSIGNEE(S):      Fuji Photo Film Co., Ltd., Japan
SOURCE:                  PCT Int. Appl., 89 pp.
                         CODEN: PIXXD2
DOCUMENT TYPE:           Patent
LANGUAGE:                Japanese
FAMILY ACC. NUM. COUNT:  1
PATENT INFORMATION:

     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
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     WO 2001021624        A1    20010329    WO 2000-JP6401
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         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,
             CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL,
             PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA,
             UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ,
             TM
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH,
             CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE,
             BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
     AU 2000073169        A5    20010424    AU 2000-73169
                                                                   200009
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     EP 1219626           A1    20020703    EP 2000-961100
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     EP 1219626           B1    20050601
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
             PT, IE, SI, LT, LV, FI, RO, MK, CY, AL
     AT 296828            E     20050615    AT 2000-961100
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     US 6794509          B1     20040921    US 2002-88232
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PRIORITY APPLN. INFO.:                      JP 1999-264844       A
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                                                            199909
                                                            20
                                            JP 1999-294910       A
                                                            199910
                                                            18
                                            JP 1999-294911       A
                                                            199910
                                                            18
                                            JP 2000-117451       A
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                                            WO 2000-JP6401       W
                                                            200009
                                                            20
OTHER SOURCE(S):          MARPAT 134:266295
GI
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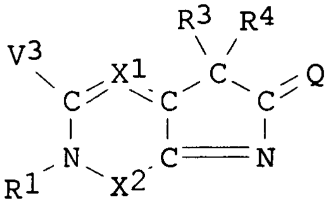

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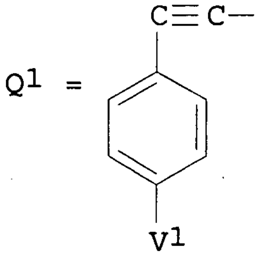
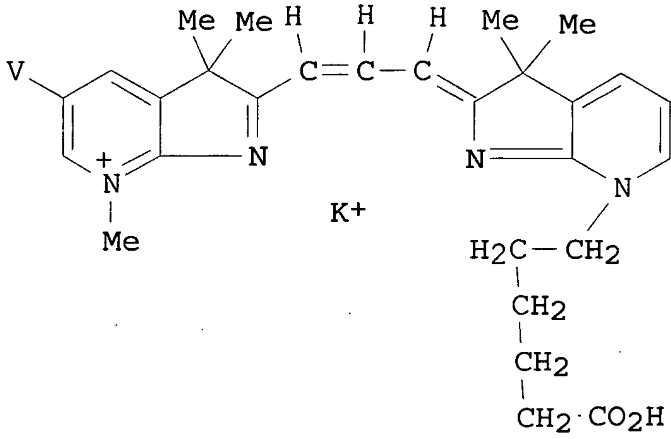




II

AB The title compds. I [X1 = (CV2CV1)m; X2 = (CV4:CV5)n; V1 to V5 represent each hydrogen, halogeno, alkyl, alkenyl, a group selected from a group consisting of groups capable of forming a covalent bond together with a substance to be labeled, etc., or V1 and V2 may be bonded to each other to form a satd. or unsatd. ring; R1 represents hydrogen or a group selected from a group consisting of alkyl, aryl and heterocyclic groups; R3 and R4 represent each alkyl, or R3 and R4 may be bonded to each other to form a ring; Q represents atoms which are necessary in forming a methine chromophore; and m and n represent each 0 or 1, provided that m+n is 1] are prepd. I are useful in **detg. DNA** sequence, **assaying** physiol. active substances by the fluorescent immunoassay method, etc. The title compd. II [V = Q1; V1 = SO3-] was prepd. and showed max. fluorescence at 669 nm. The fluorescence intensity of compds. of this invention is 2 - 3 times stronger than that of prior art fluorescent dyes.

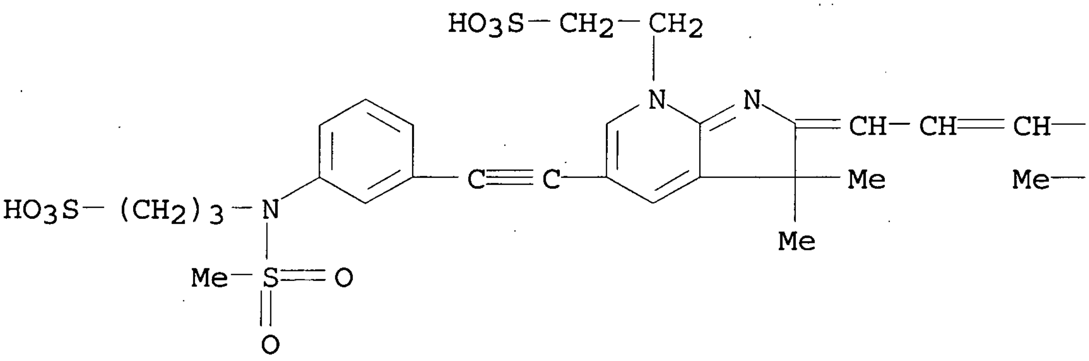
IT **331777-48-1**
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); PRP (Properties); BIOL (Biological study)

(prepn. of azaindole derivs. for fluorescence labeling)

RN 331777-48-1 HCAPLUS

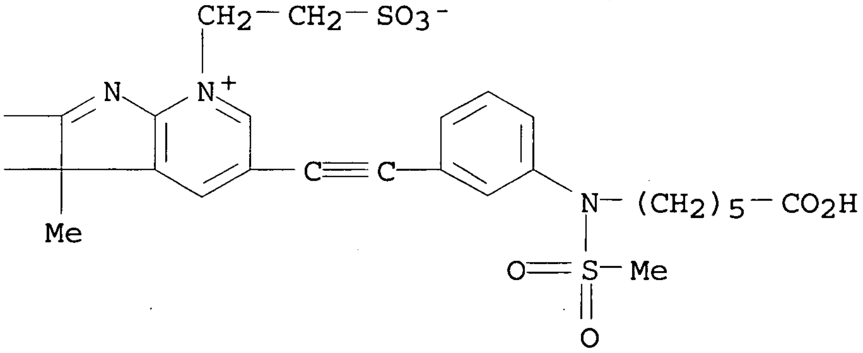
CN 3H-Pyrrolo[2,3-b]pyridinium, 5-[[3-[(5-carboxypentyl)(methylsulfonyl)amino]phenyl]ethynyl]-2-[3-[3,7-dihydro-3,3-dimethyl-5-[[3-[(methylsulfonyl)(3-sulfopropyl)amino]phenyl]ethynyl]-7-(2-sulfoethyl)-2H-pyrrolo[2,3-b]pyridin-2-ylidene]-1-propenyl]-3,3-dimethyl-7-(2-sulfoethyl)-, inner salt, dipotassium salt (9CI) (CA INDEX NAME)

PAGE 1-A



●2 K

PAGE 1-B



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IC    ICM  C07D519-00
      ICS  C07D471-04; C07D491-107; C07D471-20; C07F009-6561
CC    28-2 (Heterocyclic Compounds (More Than One Hetero Atom))
      Section cross-reference(s): 3, 9, 41
IT    Dyes
         (azaindole derivs. for fluorescence labeling in DNA
         sequence detn. and fluorescent immunoassay)
IT    Immunoassay
         (fluorescence; prepn. of azaindole derivs. for fluorescence
         labeling in DNA sequence detn. and
         fluorescent immunoassay)
IT    DNA sequences
         (prepn. of azaindole derivs. for fluorescence labeling in
         DNA sequence detn.)
IT    331777-48-1 331777-49-2 331777-50-5
      331777-51-6 331777-52-7 331777-53-8
      331777-54-9 331777-55-0 331777-56-1
      331777-57-2 331777-58-3 331777-59-4
      331777-60-7 331777-61-8 331777-62-9
      331777-63-0 331777-64-1 331777-65-2
      331778-83-7
      RL: BAC (Biological activity or effector, except adverse); BSU
      (Biological study, unclassified); PRP (Properties); BIOL (Biological
      study)
         (prepn. of azaindole derivs. for fluorescence labeling)
IT    331777-32-3P 331777-33-4P 331777-34-5P
      331777-35-6P 331777-36-7P
      RL: BAC (Biological activity or effector, except adverse); BSU
      (Biological study, unclassified); SPN (Synthetic preparation); BIOL
      (Biological study); PREP (Preparation)
         (prepn. of azaindole derivs. for fluorescence labeling)
IT    80714-39-2P   101567-75-3P   111448-81-8P   331777-38-9P
      331777-40-3P   331777-41-4P   331777-42-5P   331777-43-6P
      331777-44-7P   331777-45-8P 331777-46-9P
      331777-47-0P   331777-66-3P   331777-68-5P   331777-69-6P
      331777-73-2P   331777-74-3P   331777-75-4P   331777-76-5P
      331777-77-6P   331777-78-7P   331777-79-8P   331777-80-1P
      331777-81-2P   331777-82-3P   331777-83-4P   331777-84-5P
      331777-85-6P   331777-86-7P   331777-87-8P   331777-88-9P
      RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);
      RACT (Reactant or reagent)
         (prepn. of azaindole derivs. for fluorescence labeling)
REFERENCE COUNT:          10    THERE ARE 10 CITED REFERENCES AVAILABLE
                                FOR THIS RECORD. ALL CITATIONS AVAILABLE
                                IN THE RE FORMAT
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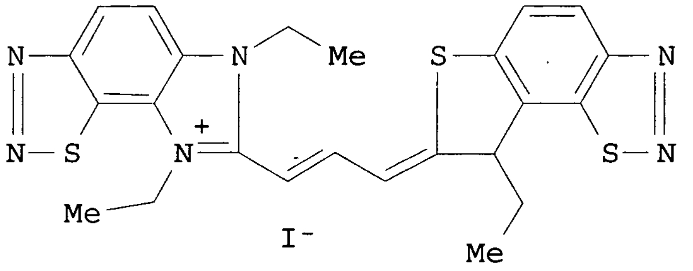
L25 ANSWER 26 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:	2000:807989 HCAPLUS
DOCUMENT NUMBER:	134:337740
TITLE:	Proteins and cyanine dyes. 1. Asymmetrical carbocyanine dye 14K - a new fluorescent probe for homogeneous **detection** of **proteins** in solution
AUTHOR(S):	Yarmolyuk, S. M.
CORPORATE SOURCE:	Inst. Mol. Biol. ta Genet., NAN Ukr., Kiev, 03143, Ukraine
SOURCE:	Biopolimery i Kletka (2000), 16(3), 236-239 CODEN: BIKLEK; ISSN: 0233-7657
PUBLISHER:	Institut Molekulyarnoi Biologii i Genetiki NAN Ukrainy
DOCUMENT TYPE:	Journal
LANGUAGE:	Ukrainian

GI



I

AB An interaction of carbocyanine 14K (I) with four proteins in both native and denatured states has been studied. The difference in fluorescent enhancement of this dye in the presence of various proteins has been shown. The fluorescence intensity of 14K in the presence of denatured proteins increased by 25-40% in comparison with the fluorescence intensity of this dye in the complexes with corresponding native proteins. A possible mechanism of increasing the dye fluorescence under the interaction with proteins and nucleic acids has been proposed. The influence of different substances on fluorescent properties of 14K has been studied.

IT **338393-10-5**

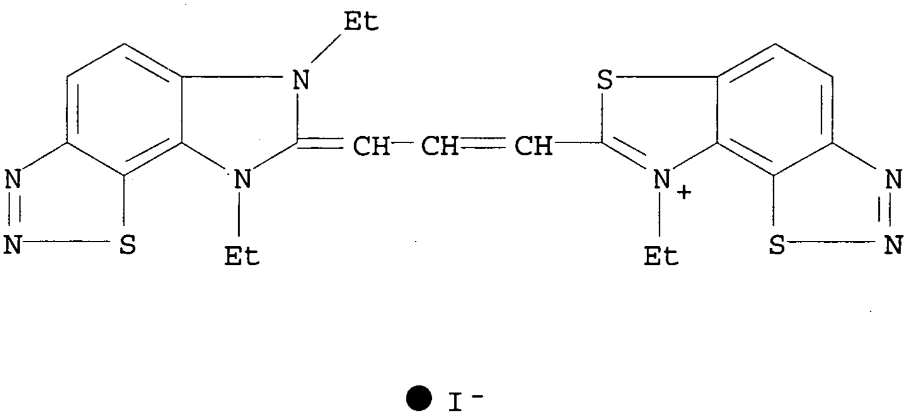
RL: **ARG (Analytical reagent use)**; PRP (Properties); **ANST (Analytical study)**; USES (Uses)

(asym. carbocyanine dye 14K as fluorescent probe for homogeneous

detection of **proteins** in soln.)

RN 338393-10-5 HCAPLUS

CN Thiazolo[5,4-g]-1,2,3-benzothiadiazolium, 7-[3-(6,8-diethyl-6,8-dihydro-7H-imidazo[4,5-g]-1,2,3-benzothiadiazol-7-ylidene)-1-propenyl]-8-ethyl-, iodide (9CI) (CA INDEX NAME)



CC 9-4 (Biochemical Methods)

IT Cyanine dyes
Fluorescence
(asym. carbocyanine dye 14K as fluorescent probe for homogeneous **detection** of **proteins** in soln.)

IT **Proteins**, general, **analysis**
RL: ANT (Analyte); BOC (Biological occurrence); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study); OCCU (Occurrence)
(asym. carbocyanine dye 14K as fluorescent probe for homogeneous **detection** of **proteins** in soln.)

IT **338393-10-5**
RL: **ARG (Analytical reagent use)**; PRP (Properties); **ANST (Analytical study)**; USES (Uses)
(asym. carbocyanine dye 14K as fluorescent probe for homogeneous **detection** of **proteins** in soln.)

L25 ANSWER 27 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:	2000:790577 HCAPLUS
DOCUMENT NUMBER:	133:351506
TITLE:	Aza-benzazolium-containing cyanine dyes and their use in fluorescent biological stains
INVENTOR(S):	Haugland, Richard P.; Yue, Stephen T.
PATENT ASSIGNEE(S):	Molecular Probes, Inc., USA

```
SOURCE:                  PCT Int. Appl., 87 pp.
                         CODEN: PIXXD2
DOCUMENT TYPE:           Patent
LANGUAGE:                English
FAMILY ACC. NUM. COUNT:  1
PATENT INFORMATION:

     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
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     WO 2000066664        A1    20001109    WO 2000-US11549
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         W:  AU, CA, JP
         RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,
             NL, PT, SE
     US 6664047           B1    20031216    US 2000-557275
                                                                   200004
                                                                   24
     AU 2000046786        A5    20001117    AU 2000-46786
                                                                   200004
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     US 2004137475        A1    20040715    US 2003-683753
                                                                   200310
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PRIORITY APPLN. INFO.:                      US 1999-131782P     P
                                                                   199904
                                                                   30

                                            US 1999-158859P     P
                                                                   199910
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                                            US 2000-557275      A3
                                                                   200004
                                                                   24

                                            WO 2000-US11549     W
                                                                   200004
                                                                   26

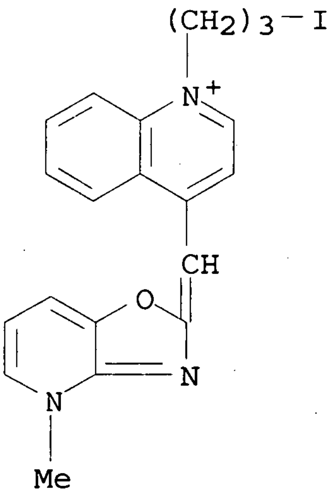
OTHER SOURCE(S):         CASREACT 133:351506
AB   Unsym. cyanine dyes that incorporate an aza-benzazolium ring moiety
     are disclosed, including cyanine dyes substituted by a cationic side
     chain, monomeric and dimeric cyanine dyes, chem. reactive cyanine
```

dyes, and conjugates of cyanine dyes. The dyes are virtually non-fluorescent when dild. in aq. soln., but exhibit bright fluorescence when assocd. with nucleic acid polymers such as DNA or RNA, or when assocd. with detergent-complexed proteins. A variety of applications are described for **detection** and **quantitation** of **nucleic acids** and detergent-complexed proteins in a variety of samples, including solns., electrophoretic gels, cells, and microorganisms.

IT **305801-85-8P**
RL: **ARG (Analytical reagent use)**; RCT (Reactant); PREP (Preparation); **ANST (Analytical study)**
(dye intermediate; prodn. of azabenzazolium cyanine dyes for fluorescent biol. stains)

RN 305801-85-8 HCAPLUS

CN Quinolinium, 1-(3-iodopropyl)-4-[(4-methyloxazolo[4,5-b]pyridin-2(4H)-ylidene)methyl]-, iodide (9CI) (CA INDEX NAME)



● I-

IC ICM C09B023-02
ICS G01N033-52; G01N033-68; G01N033-58; C12Q001-68

CC 41-11 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)
Section cross-reference(s): 9

IT Nucleic acids

```
          Peptides, analysis
          Proteins, general, analysis
        RNA
        RL: ANT (Analyte); ANST (Analytical study)
           (prodn. of azabenzazolium cyanine dyes for fluorescent biol.
           stains for)
IT      305801-85-8P 305802-05-5P
        RL: IMF (Industrial manufacture); RCT (Reactant); PREP
        (Preparation); RACT (Reactant or reagent)
           (dye intermediate; prodn. of azabenzazolium cyanine dyes for
           fluorescent biol. stains)
IT      305801-73-4P 305801-74-5P 305801-75-6P
        305801-76-7P 305801-77-8P 305801-78-9P
        305801-79-0P 305801-80-3P 305801-81-4P
        305801-82-5P 305801-83-6P 305801-84-7P
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        305802-24-8P
        RL: ARG (Analytical reagent use); BUU (Biological use,
        unclassified); IMF (Industrial manufacture); ANST (Analytical
        study); BIOL (Biological study); PREP (Preparation); USES
        (Uses)
           (dye; prodn. of azabenzazolium cyanine dyes for fluorescent biol.
           stains)
IT      305801-97-2P 305801-99-4P 305802-06-6P
        305802-07-7P 305802-09-9P 305802-15-7P
        305802-16-8P 305802-18-0P 305802-20-4P
        305802-22-6P
        RL: IMF (Industrial manufacture); PREP (Preparation)
           (dye; prodn. of azabenzazolium cyanine dyes for fluorescent biol.
           stains)
REFERENCE COUNT:         8     THERE ARE 8 CITED REFERENCES AVAILABLE FOR
                               THIS RECORD. ALL CITATIONS AVAILABLE IN
                               THE RE FORMAT

L25  ANSWER 28 OF 30  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:        2000:158433  HCAPLUS
DOCUMENT NUMBER:         133:70891
TITLE:                   Interaction of cyanine dyes with nucleic acids.
                         8. Investigation of cyanine dyes as fluorescent
                         probes for the nucleic acids
```

detection

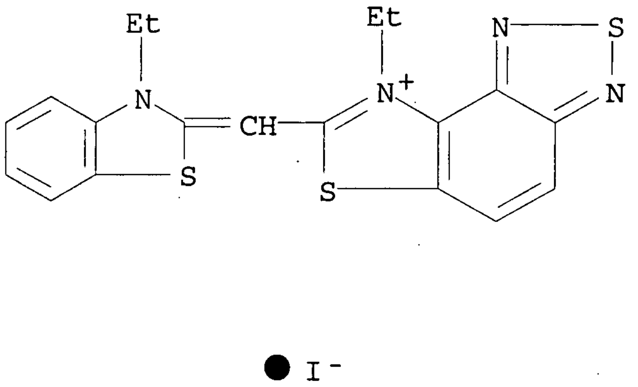
AUTHOR(S): Yarmolyuk, S. M.
CORPORATE SOURCE: Inst. Mol. Biol. i Genet., NAN Ukr., Kiev, Ukraine
SOURCE: Biopolimery i Kletka (1999), 15(4), 328-336
CODEN: BIKLEK; ISSN: 0233-7657
PUBLISHER: Institut Molekulyarnoi Biologii i Genetiki NAN Ukrainy
DOCUMENT TYPE: Journal
LANGUAGE: Ukrainian

AB Nineteen polymethyne cyanine dyes with various heterocycles were investigated as possible fluorescent probes for homogeneous **nucleic acid detection** in soln.
Absorption and fluorescent properties of these dyes, their complexes with DNA and RNA and in the presence of protein were studied. A possible model of a "viscous environment" for intensity enhancement of cyanine dyes in their fluorescent complexes with nucleic acids is proposed.

IT **113569-40-7**
RL: **ARG (Analytical reagent use)**; PRP (Properties); **ANST (Analytical study)**; USES (Uses)
(polymethine cyanine dyes as fluorescent probes for the **nucleic acids detection**)

RN 113569-40-7 HCAPLUS

CN Thiazolo[4,5-e]-2,1,3-benzothiadiazolium, 8-ethyl-7-[(3-ethyl-2(3H)-benzothiazolylidene)methyl]-, iodide (9CI) (CA INDEX NAME)



CC 9-4 (Biochemical Methods)

ST **nucleic acid detection** cyanine dye

IT Fluorescent probes
(polymethine cyanine dyes as fluorescent probes for the

```
         nucleic acids detection)
IT    Nucleic acids
      RL: ANT (Analyte); BOC (Biological occurrence); BSU (Biological
      study, unclassified); ANST (Analytical study); BIOL (Biological
      study); OCCU (Occurrence)
         (polymethine cyanine dyes as fluorescent probes for the
         nucleic acids detection)
IT    Cyanine dyes
         (polymethine; polymethine cyanine dyes as fluorescent probes for
         the nucleic acids detection)
IT    2988-29-6   13479-97-5   18019-99-3   31038-51-4   100626-66-2
      107091-89-4 113569-40-7   279242-56-7   279242-58-9
      279242-59-0   279242-60-3   279242-61-4   279242-62-5   279242-63-6
      279242-65-8 279242-66-9   279242-68-1   279242-69-2
      279242-70-5
      RL: ARG (Analytical reagent use); PRP (Properties);
      ANST (Analytical study); USES (Uses)
         (polymethine cyanine dyes as fluorescent probes for the
         nucleic acids detection)

L25  ANSWER 29 OF 30  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:         1995:3281  HCAPLUS
DOCUMENT NUMBER:          122:155746
TITLE:                    Fluorescent dyes for labeling biosubstances for
                          analysis
INVENTOR(S):              Katayose, Mitsuo; Tai, Seiji; Watanabe, Hiroo
PATENT ASSIGNEE(S):       Hitachi Chemical Co Ltd, Japan
SOURCE:                   Jpn. Kokai Tokkyo Koho, 8 pp.
                          CODEN: JKXXAF
DOCUMENT TYPE:            Patent
LANGUAGE:                 Japanese
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.          KIND    DATE          APPLICATION NO.         DATE
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     JP 05287209          A2     19931102      JP 1992-88743
                                                                      199204
                                                                      09
PRIORITY APPLN. INFO.:                         JP 1992-88743
                                                                      199204
                                                                      09

OTHER SOURCE(S):          MARPAT 122:155746
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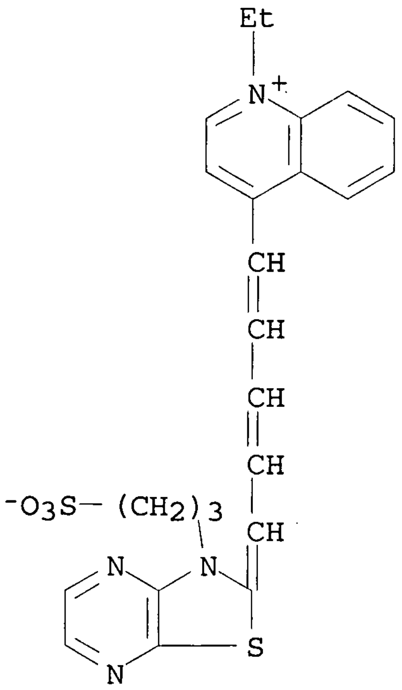
GI For diagram(s), see printed CA Issue.

AB The fluorescent dyes I (A1, A2 = benzene, naphthalene, etc.; R1-3 = H, alkyl, alkoxy; X1 = S, O, etc.; X2 = S, O, CO, etc.; and L = polymethylene) and biosubstance (e.g. vitamin, nucleotide, or protein) labeled with the fluorescent dye are prepd. and used for antigen, pharmaceutical, or **DNA anal.** Four such fluorescent dyes, their sulfonylchloride derivs. and p-aminobenzoic acid adducts, and 3-(4-aminobutyl)morphine labeled with these dyes were prepd. for morphine anal. A labeled DNA probe, i.e. GTTTCCCAGTCACGAC, was also prepd. for **DNA** sequence **anal.** The detection of the dye is not affected by heme in blood and is therefore a good test reagent for clin. anal.

IT **154187-65-2P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of, as label, for biosubstance detn.)

RN 154187-65-2 HCAPLUS

CN Quinolinium, 1-ethyl-4-[5-[3-(3-sulfopropyl)thiazolo[4,5-b]pyrazin-2(3H)-ylidene]-1,3-pentadienyl]-, inner salt (9CI) (CA INDEX NAME)



IC ICM C09B023-00
ICS C09K011-06; G01N021-64; G01N021-78; G01N033-533

CC 9-14 (Biochemical Methods)

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     Section cross-reference(s): 3, 4, 15, 41, 64
ST   fluorescent dye biosubstance label clin analysis; antigen
     pharmaceutical DNA analysis fluorescent dye;
     vitamin nucleotide protein fluorescent dye label
IT   154187-62-9P   154187-63-0P   154187-64-1P 154187-65-2P
     154187-66-3P 154187-67-4P   161066-73-5P
     161066-74-6P   161098-14-2P   161098-15-3P   161159-47-3P
     161159-48-4P
     RL: SPN (Synthetic preparation); PREP (Preparation)
        (prepn. of, as label, for biosubstance detn.)

L25  ANSWER 30 OF 30  HCAPLUS  COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER:        1992:604556  HCAPLUS
DOCUMENT NUMBER:         117:204556
TITLE:                   Antagonists that demonstrate species differences
                         in neurokinin-1 receptors
AUTHOR(S):               Appell, Kenneth C.; Fragale, Barbara J.; Loscig,
                         Jane; Singh, Saira; Tomczuk, Bruce E.
CORPORATE SOURCE:        Dep. Enzymol. Biochem., Sterling Res. Group,
                         Malvern, PA, 19355, USA
SOURCE:                  Molecular Pharmacology (1992), 41(4), 772-8
                         CODEN: MOPMA3; ISSN: 0026-895X
DOCUMENT TYPE:           Journal
LANGUAGE:                English
AB   125I-Bolton-Hunter-substance P (125I-BH-SP) binding properties of
     three novel classes of neurokinin-1 (NK-1) receptor antagonists were
     investigated in tissues derived from humans, guinea pigs, and rats.
     125I-BH-SP was shown to bind to a single class of binding sites,
     with similar dissocn. consts., Kd, in human astrocytoma cells (U-373
     MG), human urinary bladder, guinea pig forebrain, guinea pig ileum
     longitudinal smooth muscle, rat forebrain, and rat duodenum.  In
     each tissue prepn., known peptide agonists and peptide antagonists
     yielded potencies typical for a NK-1 receptor profile, with little
     difference in binding properties between the various tissues.
     However, when the three classes of compds., heterosteroids,
     cyanines, and modified peptides, were tested for
     their ability to displace 125I-BH-SP binding from the NK-1 receptor,
     very different binding profiles were obsd.  The heterosteroids were
     shown to be as much as 3 orders of magnitude more potent in tissues
     derived from rats than from humans or guinea pigs.  A distinct
     species-dependent structure-activity relationship (SAR) was also
     obsd. for this class of compds.  Like the heterosteroids, the
     cyanines displaced 125I-BH-SP with 10-30-fold higher affinity in rat
     tissues than in human and guinea pig tissues.  However, the SAR
     generated by the cyanines was comparable in all tissues studied.
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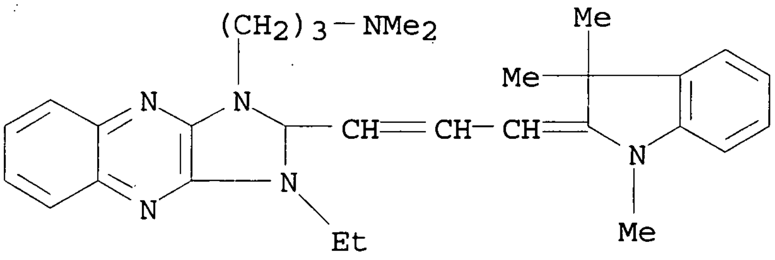
The modified peptides, on the other hand, were up to 10-100-fold more potent in human and guinea pig than rat tissues, producing a SAR that differed between the various species. No differences in binding properties between central nervous system and peripheral tissues from the same species were seen with these compds. These results provide evidence for species differences in NK-1 receptors in humans, guinea pigs, and rats. Because it is known that there exists great sequence identity between rat and human NK-1 receptors, it is hypothesized that key amino acid changes or different lipid environments within the transmembrane binding region of the receptor may account for the obsd. species difference. Furthermore, this study emphasizes that caution is necessary in the choice of species to be used in development programs targeted towards therapeutic entities in the NK-1 receptor antagonist area.

IT **133671-82-6**
RL: BIOL (Biological study)
(neurokinin-1 receptor binding of, structure in relation to)
RN 133671-82-6 HCAPLUS
CN 1H-Imidazo[4,5-b]quinoxalinium, 2-[3-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-1-propenyl]-1-[3-(dimethylamino)propyl]-3-ethyl-, chloride (9CI) (CA INDEX NAME)



● Cl^-

ONE OR MORE TAUTOMERIC DOUBLE BONDS NOT DISPLAYED IN THE STRUCTURE
CC 1-3 (Pharmacology)
Section cross-reference(s): 2
IT 75981-05-4 **133671-82-6** 139167-47-8 144177-30-0
144177-31-1 144177-32-2 144285-80-3 **144285-82-5**
144285-83-6 144310-80-5 144310-81-6
RL: BIOL (Biological study)
(neurokinin-1 receptor binding of, structure in relation to)

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